2024 Greenhouse Gas Inventory

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List of Nomenclature

AASHE	Association for the Advancement of Sustainability in Higher Education
CCC	Campus Carbon Calculator
CFC	Chlorofluorocarbons
CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
BDT	Bone dry ton
eGRID	Emissions and Generation Resource Integrated Database
EPA	United States Environmental Protection Agency
FERA	Fuel- and energy-related activities
FY2023	Fiscal Year 2023
GHG	Greenhouse gas(es)
GWP	Global warming potential
HFC	Hydrofluorocarbons
IRIC	Integrated Research and Innovation Center
Kg	Kilogram
kWh	Kilowatt-hour
N_2O	Nitrous oxide
NWPP	Northwest Power Pool subregion
OOS	Office of Sustainability
PCLC	Presidents' Climate Leadership Commitments
PFC	Perfluorocarbons
REC	Renewable energy certificate
Scope 1	Direct emissions
Scope 2	Indirect emissions
Scope 3	Other emissions
SF_6	Sulfur hexafluoride
SIMAP	Sustainability Indicator Management and Analysis Platform
STARS	Sustainability Tracking, Assessment, and Rating System
T&D	Transmission and distribution
U of I	University of Idaho
WRI	World Resources Institute

Highlights

Total Emissions
(metric tons CO_2e)

FY2024 Net Emissions:
42,767.60

Scope 1:
14,152.20

Scope 2:
12,272.44

Scope 3:
16,342.96

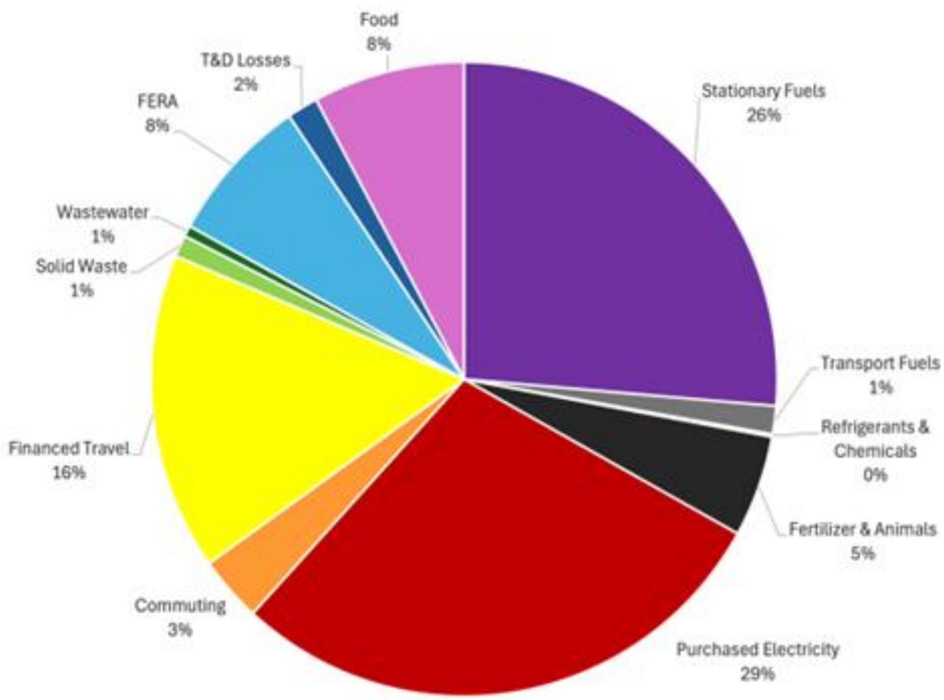
Emissions per student:
3.78 tons

Emissions per sq. ft:
9.40 tons

Change in Emissions:
+ 23.13%
from FY2023

Executive Summary

Total greenhouse gas emissions for the University of Idaho in fiscal year 2024 (FY2024) were 42,767.60 metric tons of carbon dioxide equivalent (CO_2e). This represents a 23.13% increase from fiscal year 2023 (FY2023). The largest sources of campus emissions were purchased electricity consumption (29%), stationary fuel use (e.g. natural gas and wood chips) (26%), and directly financed travel (16%). The largest increases in emissions come from natural gas use (46%), financed air travel (156%), and food (68%), while electricity consumption decreased slightly since 2023. This inventory encompasses the main Moscow campus, neighboring farms, and other locations in Moscow, Idaho.



Improvements can be made across all categories. To achieve a carbon neutrality goal, the University of Idaho must continue to reduce energy consumption through increases in building efficiencies and further investment in renewable energy sources, like photovoltaic solar arrays. Modifying behaviors of the campus community, such as those related to financed travel, commuting, utility use, and fuel consumption, can also result in significant emissions reductions.

Introduction

Purpose of this Report

The University of Idaho (U of I) is committed to institutional sustainability. Recent initiatives, like the university's Presidential Sustainability White Paper and the Gold sustainability rating awarded by the Association for the Advancement of Sustainability in Higher Education's (AASHE) Sustainability Tracking and Reporting System (STARS), reflect this commitment. U of I acknowledges the serious impact of climate change on the environmental, economic, and social wellbeing of communities both locally and globally. In Idaho, climate change affects many of the state's major industries, including agriculture, energy, forestry, rangeland, healthcare, and tourism [1]. As a signatory of two climate commitments, the Talloires Declaration and the Presidents' Climate Leadership Commitments (PCLC), the university set a goal to achieve carbon neutrality by 2030, outlined in its Climate Action Plan. This report aims to quantify the university's recent greenhouse gas (GHG) emissions as a necessary step towards achieving this goal.

Organizational Boundaries

For this GHG inventory, the organizational boundary encompasses the Moscow, Idaho campus and adjacent facilities under U of I's jurisdiction. These additional facilities include West Farm, North Farm, and the Parker Farm. This report excludes certain Moscow facilities, like university-owned family housing and the Greek system, which are on their own utility meters. Facilities elsewhere in the state are also excluded from this GHG inventory. Appendix A provides a list of the campus buildings that lie within the boundaries of this report.

Methodology

Units

The carbon footprint of an institution is a measure of the GHGs it emits through its various activities and operations. The Kyoto Protocol specifies six specific GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6) [2]. The standard unit for measuring and reporting these GHG emissions is in metric tons of carbon dioxide equivalent (CO_2e), which is calculated using the global warming potentials (GWP) of the GHGs (see Table 1). Each gas has a different ability to absorb energy and trap heat. GWPs compare the amount of energy that the emissions of one ton of a specific gas will absorb over a set period of time, typically a 100-year average [3]. Using CO_2e to standardize emissions allows for comparisons of impact between gases.

For consistency, CO_2e is used in this report for measuring all GHG emissions. Other measured data, such as solid waste generation, are measured in U.S. customary units, like the short ton (2,000 lb.).

Wood chip weight is reported in bone-dry tons (BDT). The BDT equates to 2,000 pounds of wood with zero moisture content and is the conventional unit of measurement when quantifying wood chips.

Unless stated otherwise, other references to tons in this report always refer to metric tons.

Gas Name	Chemical Formula	Global Warming Potential (CO_2e)
Methane	CH_4	28
Nitrous Oxide	N_2O	273
HCFC-22	$CHClF_2$	1,760
R404-a	CHF_2CF_3, CH_3CF_3, and CH_2FCF_3	3,943

Table 1*: SIMAP GWP values for GHGs measured in this report.*

U of I Reporting Methods

GHG reporting methods have changed over the years as data collection and modeling techniques improve. The Greenhouse Gas Protocol (GHG Protocol), developed by the World Resources Institute (WRI), provides standards, guidance, and a selection of tools to measure GHG emissions [4]. GHG Protocol standards are the most accepted worldwide and nearly all emissions calculators available are based on them.

Early U of I GHG inventories used the Campus Carbon Calculator (CCC) tool, which was developed at the University of New Hampshire and based on the GHG Protocol standards. The CCC was a calculation tool designed specifically for institutions of higher education and enabled them to quantify their GHG emissions. The CCC program was discontinued in January 2018 and replaced by the Sustainability Indicator Management and Analysis Platform (SIMAP). In SIMAP, the user enters raw data (e.g. wastewater volumes or natural gas consumption) into the online tool, which calculates emissions from usage data and each source's relevant emissions factor.

An emissions factor is a coefficient which allows for the conversion of activity data (e.g. the burning of one gallon of gasoline) into GHG emission weights (e.g. 8.49898762 kg CO_2, 0.00046334 kg CH_4, and 0.000301 kg N_2O) which can subsequently be converted into CO_2e with GWP values. Previous U of I GHG reports occasionally used emissions factors directly sourced from the United States Environmental Protection Agency (EPA) and hand-calculated CO_2e. This report uses SIMAP for all conversion metrics to eliminate sources of error. While the EPA provides the raw data for SIMAP, the software provides calculations to convert the emission factors into useable data. Sometimes this is simply a unit conversion, such as changing the EPA eGRID electricity values from lb./MWh to kg/kWh, but it can be a longer calculation, such as calculating the CO_2 emission factors for stationary fuels from the carbon content and heating values of those fuel sources. Therefore, using SIMAP's emissions factors to calculate total emissions yields more accurate results than manually calculating emissions from the EPA and standardizes methodology.

Previous Reports and Baseline Year

This report inventories U of I's GHG emissions for FY2024, which took place between July 1, 2023, and June 30, 2024. GHG emission inventory reports have previously been completed for the university in fiscal years 2008, 2011, 2013, 2019, 2020, and 2023. The FY2023 GHG report was the first to be completed by U of I's Office of Sustainability, as the office was created in 2023 with staff dedicated to working towards large sustainability goals.

Previous U of I GHG emissions reports and AASHE STARS reports used emissions data from 2005 as the baseline year for benchmarking progress. Due to significant changes in methodology, inconsistencies in reporting, and unfillable gaps in historic data (especially with Scope 3 emissions), the Office of Sustainability determined that it is impossible to make accurate comparisons between 2005 and current emissions. Therefore, we established FY2023 as our university's baseline year for internal GHG emission accounting and comparisons. Establishing FY2023 as the baseline ensures that this GHG inventory and future ones can accurately quantify and report progress in reducing the university's emissions footprint. This decision was made in consultation with the developers of SIMAP at the University of New Hampshire. Raw data for both FY2023 and FY2024 are available in Appendix D.

The year 2005 will still be used as the benchmark year for AASHE STARS reporting because AASHE only requires data from Scopes 1 and 2 emissions, and the 2005 data for Scope 1 and 2 emissions sources meets the organization's reporting requirements.

Results and Discussion

Scopes (Operational Boundaries)

Operational boundaries define which emissions can be realistically measured and are grouped together in "Scopes." The three measured scopes are defined by the level of responsibility an institution holds for the produced emissions. Scope 1 emissions are direct emissions, which come from owned or controlled operations such as on-campus natural gas consumption, or the transportation fuels used by U of I's fleet. Scope 2 emissions are indirect emissions, which come from the generation of purchased or acquired energy, like electricity produced off-site and consumed by U of I. Scope 3 emissions are often the most difficult to track, as they account for all other indirect emissions associated with an institution, such as commuting, waste generation, or food purchasing.

Scope 1: Direct Emissions

Stationary Fuels

Emissions for this category come from the combustion of natural gas and wood chips for the purpose of heating and cooling buildings.

Wood Chips

U of I has a cogeneration plant on campus that produces heat and steam. This District Energy Plant was built in 1926 to use coal, but was converted in the 1980s to burn natural gas and wood chip waste from regional timber operations. Three boilers use these fuels to produce steam to heat 62 of our campus buildings.

Wood chips are the primary fuel source for U of I's cogeneration plant. The chips are sourced from the local timber industry. Wood chips are considered a carbon-dioxide-neutral fuel source, since the CO_2 that was originally removed from the atmosphere by trees through photosynthesis would eventually cycle back into the atmosphere through the natural decomposition processes [5]. These neutral emissions from burning wood chips are called biogenic emissions. Biogenic carbon emissions do not contribute to U of I's net carbon footprint. However, burning wood chips also results in CH_4 and N_2O emissions, which are potent greenhouses gases that are not offset through the growth process of the trees. Therefore, CH_4 and N_2O emissions, quantified in units of CO_2e, are included in Scope 1 emissions and count toward U of I's net GHG footprint. Since GHG emissions accounting and the university's record-keeping have improved over time, wood chips were included in U of I's GHG emissions inventorying for the first time in FY2023.

In FY2024, the University of Idaho used 18,809.18 BDT of wood chips to fuel the District Energy Plant. This resulted in a total of 30,837.79 tons of biogenic CO_2e. Although these biogenic emissions do not add to U of I's net footprint, biogenic emissions from wood chips are provided here for reporting transparency.

Also, in FY2024, the use of wood chips as a fuel source also resulted in 3,282.24 tons CO_2e in CH_4 and N_2O emissions. The emissions generated by the burning of wood chips are indicated in Table 2 below. Compared to FY2023, U of I used fewer wood chips as fuel in the District Energy Plant and therefore emitted fewer tons of CO_2e. Emissions from wood chips decreased by about 14% from FY2023 to FY2024. Wood chip volume data was provided by McKinstry.

Source	FY2023	FY2024
Tons of Wood Chips Burned	21,870 BDT	18,809 BDT
Biogenic CO_2 emissions	35,856 tons CO_2e*	30,838 tons CO_2e*
CH_4 and N_2O emissions (Cogeneration)	3,816 tons CO_2e	3,282 tons CO_2e

***Table 2**: Tons of wood chips used and resulting emissions in FY2023.*
**Biogenic CO_2 emissions are carbon neutral and are not counted towards U of I's net GHG footprint.*

Natural Gas

There are two main sources for natural gas consumption on campus: the District Energy Plant and the main natural gas feed from Avista. The District Energy Plant uses natural gas as a supplementary fuel for wood chips, fueling the production of both electricity and steam for heating purposes. The steam from the energy plant is distributed to certain buildings on campus. As stated above, 62 campus buildings are connected to the District Energy Plant's steam network for heating (see appendix A for the list of buildings connected to the steam network).

There are 70 other campus buildings and U of I's three farms (i.e., North Farm, West Farm, and Parker Farm) that are not connected to the steam network. Categorized as *campus buildings*, these buildings must directly source natural gas for heating through one main feed from Avista. Within the *campus buildings* category are 10 additional buildings that are both fueled and billed independently of all the other campus buildings; this is because the buildings are either heated independently using natural gas, they use emergency natural gas generators, or they use supplemental natural gas for other purposes (e.g., Theophilus Tower is connected to the steam network, but it is considered an additional building because it has an emergency generator that sources natural gas independently). Appendix A has a list of these additional buildings. The District Energy Plant's and campus buildings' (inclusive of additional buildings) natural gas consumption are accounted for in this GHG inventory.

Natural gas consumption for U of I in FY2023 and FY2024 is listed in Table 3. Data was gathered directly from Avista billing statements and McKinstry. Natural gas consumption increased significantly in FY2024 compared to FY2023. In FY2024, the plant consumed

879,413 therms of natural gas, making it the single largest user on campus. Total natural gas consumption on campus was 1,504,284 therms.

Source	**Unit**	**FY2023**	**FY2024**
Energy Plant (Cogeneration)	therm	557,249	879,413
Campus Buildings	therm	471,733	624,871
Total Gas Consumption	**therm**	**1,028,982**	**1,504,284**

Table 3*: Natural gas consumption.*

The EPA estimates that 1 therm of natural gas releases 5.306 kg CO_2e after consumption [6]. Figure 1 shows emissions released from natural gas consumption at U of I in FY2023 and FY2024. In FY2024, 7,985.66 metric tons of CO_2e were released, a significant increase of 46% from FY2023. This increase may be due to the multiple outages of the District Energy Plant's wood boilers in FY2024, forcing the energy plant and other campus buildings to use more natural gas than usual when the plant could not use wood chips. In FY2024, the wood boilers had over 80 outages that forced the campus to rely on natural gas for heating, which is more than double the outages experienced in FY2023. Although some of the outages in FY2024 were scheduled for maintenance, the majority were unscheduled and indicate a critical need to repair or replace any aging equipment.

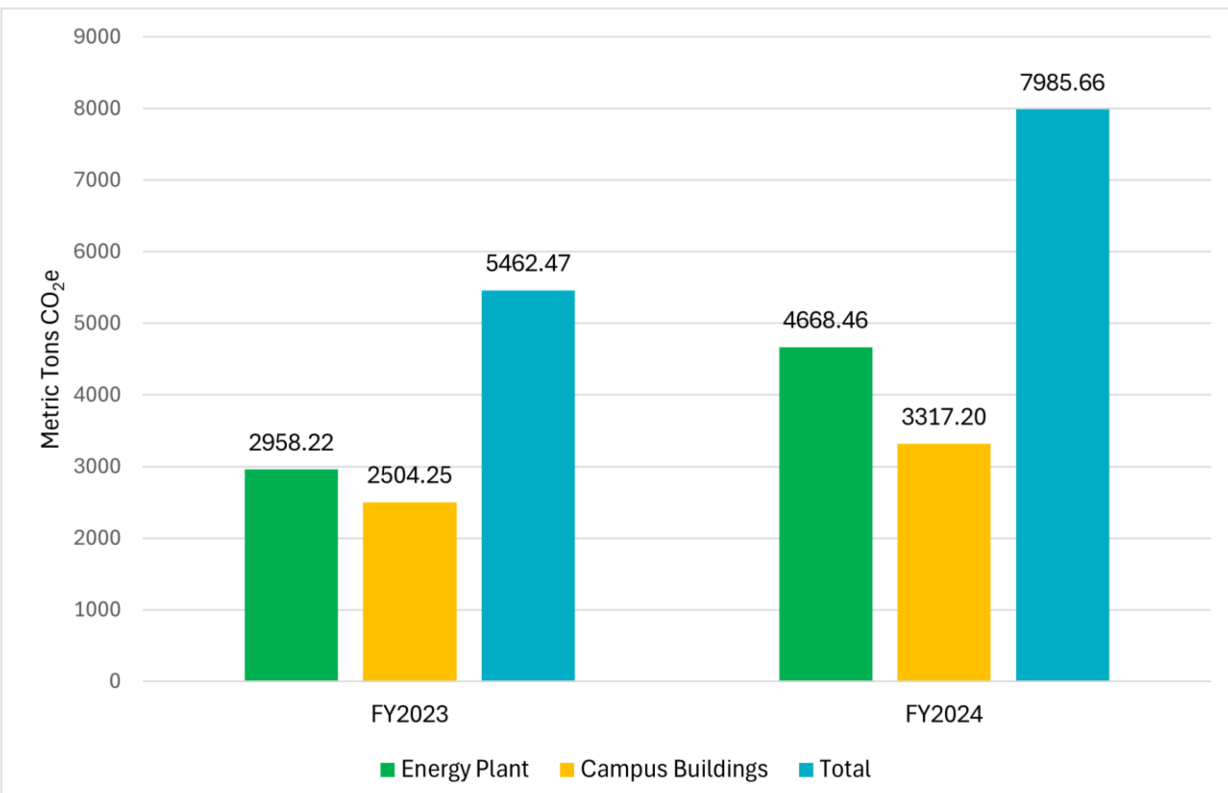


Figure 1*: Emissions from natural gas consumption.*

Total Stationary Fuels Emissions

Table 4 provides the total consumption and resulting emissions for each campus fuel source. Total emissions from stationary fuels are 11,267.9 tons of CO_2e.

Source	Consumption	FY2024 Emissions
Cogeneration: Natural Gas	879,413 therms	4,668.46 tons CO_2e
Non-Cogeneration: Natural Gas	624,871 therms	3,317.2 tons CO_2e
Cogeneration: Wood Chips	18,809 BDT	3,282.24 tons CO_2e

Table 4*: Scope 1 stationary fuels consumption and emissions.*

Transport Fuels

Another source of U of I's direct emissions is from liquid fuels used in vehicles, generators, and other machinery. Fuel for university vehicles and equipment is purchased from Coleman Oil. Data was provided through billing statements. Table 5 provides a breakdown of fuel consumption of university vehicles and other equipment for FY2023 and FY2024. The U of I uses gasoline, diesel, and biodiesel fuel. Since GHG emissions accounting and the university's record-keeping have improved over time, biodiesel was included in U of I's GHG emissions inventorying for the first time in FY2023.

Fuel Type	Units	FY2023	FY2024
Gasoline	US gallons	32,740	41,622
Diesel	US gallons	20,529	24,801
Biodiesel	US gallons	26	50

Table 5*: University fleet fuel consumption.*

Emissions from transport fuels consist mostly of CO_2, CH_4, and N_2O. Calculating precise CO_2e emissions from CH_4 and N_2O can be complex and is dependent on the specific vehicle or equipment and the technology, operation, and weather conditions [7]. The U of I fleet is diverse in age and utilization frequency, which further complicates estimating emissions. The SIMAP CO_2e calculation was used to estimate all fleet fuel emissions in order to standardize slight variations related to equipment age and use.

Figure 2 displays the emissions from each of the three transport fuels used in FY2023 and FY2024. Total emissions from all three transport fuels for FY2024 are 610.44 tons of CO_2e. Because more fuel was used in FY2024, emissions from transport fuels have increased by 24% from the baseline amount in FY2023.

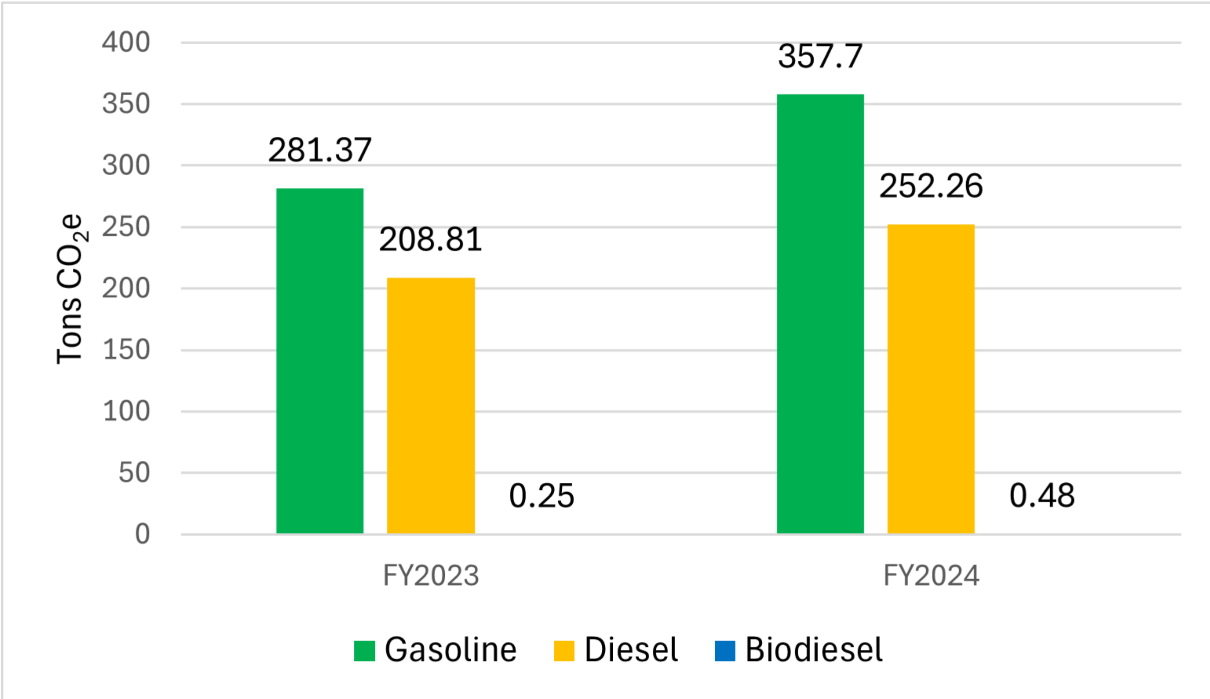


***Figure 2**: Emissions from transport fuels.*

Animals and Fertilizer

Agricultural activities contribute to the emission of GHGs, mostly in the form of CH_4 and N_2O (see Table 1). Emissions primarily result through fertilizer application, enteric fermentation from livestock (digestive microbe processes), and manure management and storage [8]. Since GHG emissions accounting and the university's record-keeping have improved over time, fertilizer was included in U of I's GHG emissions inventory for the first time in FY2023. The "Steer-a-Year" program, which is a program directed by the Animal, Veterinary and Food Sciences Department wherein steers are donated to the university to be used in animal science courses and research, was included for the first time in this report, adding to the total headcount for beef cows. Dairy cow headcount has remained consistent between FY2023 and FY2024. Animal head count data was sourced from the College of Agriculture and Life Sciences, while the fertilizer data was provided by Landscaping and Auxiliary Services. Campus Landscaping fertilizer data was included in this report but was not provided for the 2023 report. Fertilizer usage data is reported in pounds of nitrogen. Table 6 presents SIMAP emissions factors and quantities from each source, while Figure 3 illustrates the CO_2e by emission source. Emissions from animals and fertilizer only increased by 2.7% from FY2023 to FY2024.

Source	Emissions Factor (kg CO_2e/unit)	Unit	FY2024 Count	FY2023 Emissions	FY2024 Emissions
Beef cows	2,215.10	Head	113	194.61	249.32
Dairy cows	6,319.33	Head	290	1,829.88	1,829.88
Horses	581.38	Head	5	1.74	2.90
Sheep	285.19	Head	450	125.79	128.65
Fertilizer (synthetic)	2.50	Pounds	1,730	4.28	4.46
Total Emissions		**Metric tons CO_2e**		**2,156.30**	**2,215.19**

***Table 6**: Emissions by agricultural source.*

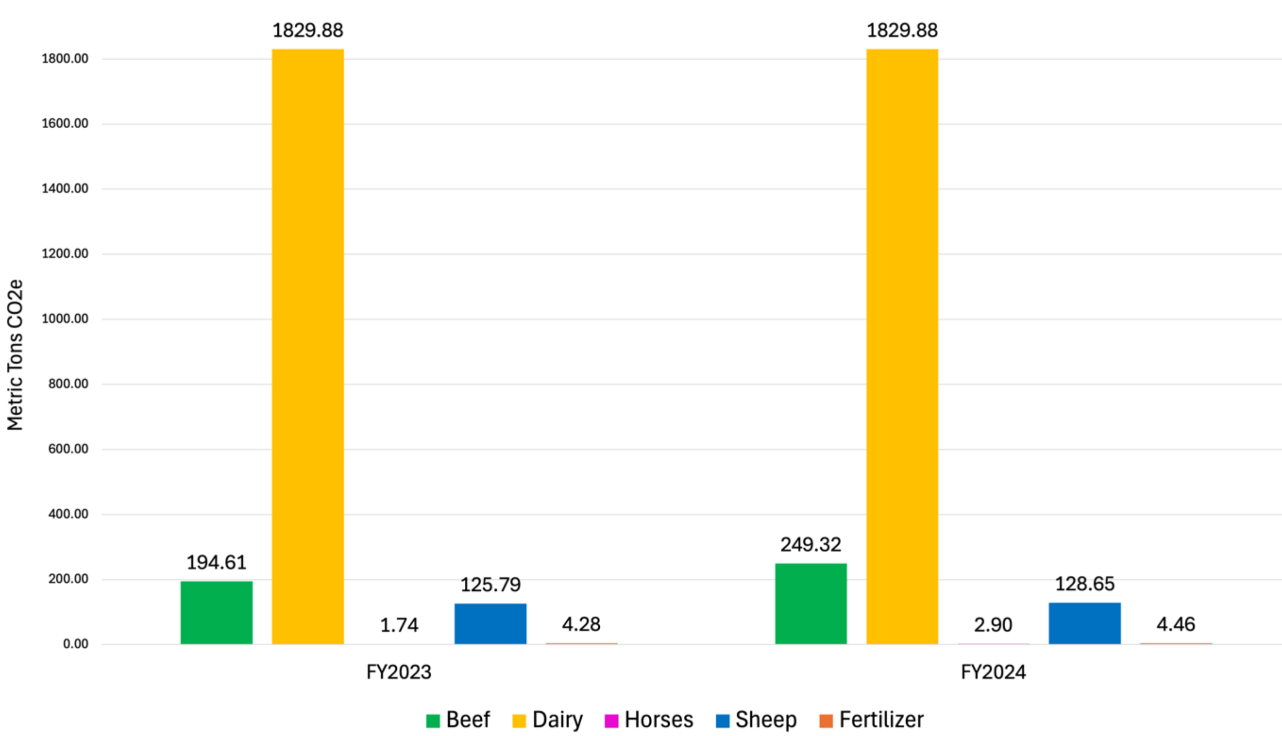


***Figure 3**: Metric tons of CO_2e produced by animal and fertilizer activities.*

Refrigerants and Chemicals

Refrigerants can release unintentional gases, known as fugitive emissions, through leakage, service, and disposal methods. The gases released from refrigerants have extremely high GWP values (see Table 1) compared to other GHGs. Three types of refrigerants, HCFC-22, R404a and R-410a, were employed on campus in FY2024, detailed in Table 7. HCFC-22 and R404a are used each year, while previous years have also reported the use of R-12, R-124, R134A, R-152A, R401A, and R-410A. All these refrigerants are recommended for replacement for most applications through the EPA's Significant

New Alternatives Policy that focuses on phasing out refrigerants with high GWPs and ozone depletion potential [9]. Multiplying the amount of leaked refrigerant by its 100-year GWP provides the annual CO_2e emissions. It is assumed that leaks from air conditioning units and refrigeration systems on campus match the amount recharged into these systems. This data was sourced from the Facilities HVAC/Refrigeration team. Emissions from refrigerants and chemicals decreased by 1.6% from FY2023 to FY2024.

Source	Unit	GWP	Usage	FY2023	FY2024
HCFC-22	kilogram	1,760	3.37	17.23	6.61
R404-a	kilogram	3,943	9.38	42.36	44.37
R410-a	kilogram	2,256	3.40	0.00	7.67
Total Emissions	**Metric tons CO_2e**			**59.59**	**58.65**

Table 7: *Refrigerant usage and emissions.*

Cumulative Scope 1 Emissions

Figure 4 displays the total Scope 1 emissions for FY2024. Total Scope 1 emissions are 14,152.20 tons of CO_2e. Stationary fuels (e.g. natural gas and wood chips) are the largest sources of emissions on campus. Beef and dairy herds also result in significant emissions. Transport fuels and refrigerants are low in comparison. Since the baseline year of FY2023, Scope 1 emissions increased by 18% in FY2024.

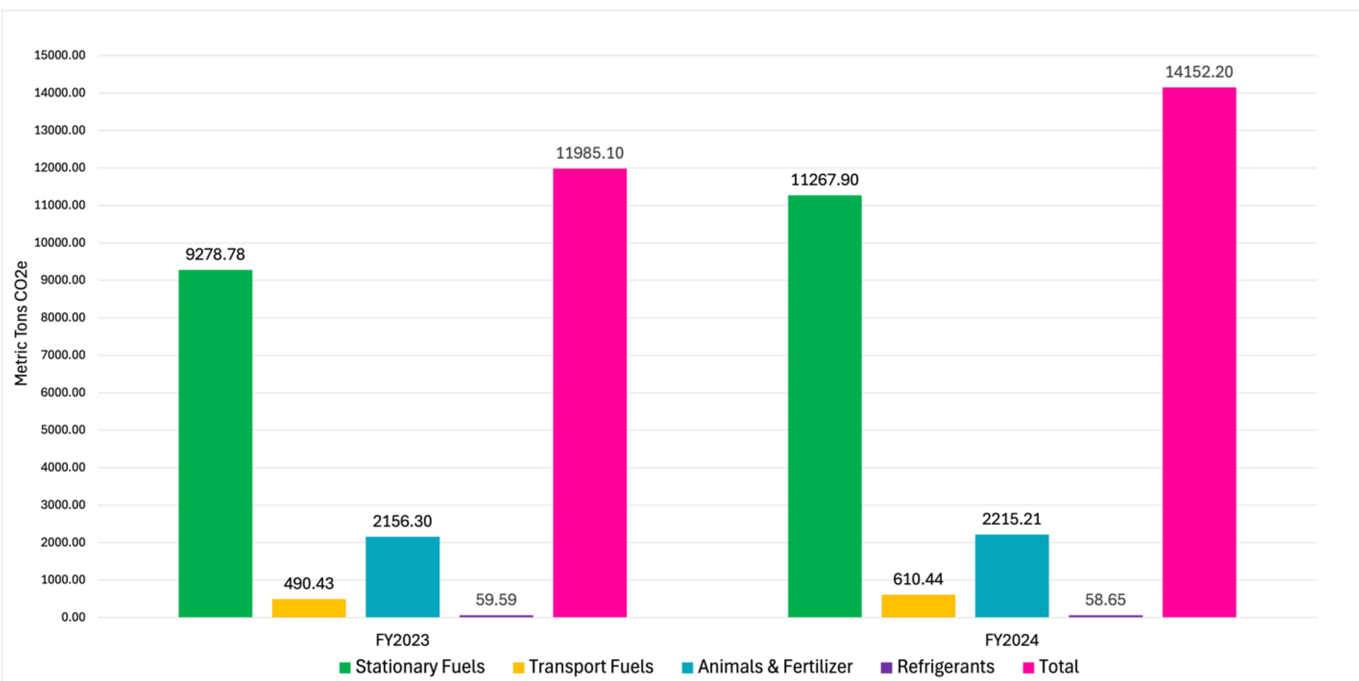


Figure 4: *Cumulative Scope 1 emissions.*

Scope 2: Indirect Emissions

Indirect emissions are from sources that are neither owned nor operated by U of I, but whose products are directly linked to campus energy consumption. This encompasses purchased energy from a utility provider. U of I purchases electricity from Avista Utilities. Although U of I did not produce the electricity, the university still consumed it to power campus, making U of I indirectly responsible for these emissions.

Purchased Electricity

Electricity is delivered to the main campus through two points, referred to as the East and West feeds. Like natural gas, there are some buildings on campus that are excluded from the East and West feeds and are billed separately in secondary accounts; these are referred to as *additional buildings*. *Additional buildings* for purchased electricity include the university golf course clubhouse, the WWAMI Medical Education Building, Art and Architecture East, the CLASS Annex, and Human Resources. Buildings at Parker Farm and North Farm (dairy and sheep farms) are also considered additional buildings. See Appendix A for the list of additional buildings for electricity.

Data for electricity consumption was sourced from monthly billing statements for the two main feeds and the accounts for the additional buildings. Table 8 includes electricity consumption for the East and West feeds, additional buildings, and total amount consumed for FY2024. The U of I consumed fewer kWh of purchased electricity in FY2024 than in FY2023.

Source	Unit	FY2023	FY2024
East/West Feeds	kWh	43,041,961	41,371,961
Additional Buildings	kWh	2,191,612	2,094,909
Total	**kWh**	**45,233,573**	**43,466,870**

***Table 8**: Electricity consumption.*

GHG Protocol guidelines require institutions to use either location or market-based methods for Scope 2 reporting [10]. Scope 2 emissions for U of I are calculated through SIMAP using the market-based method, which calculates emissions using the residual emissions factor from the EPA's Emissions and Generation Resource Integrated Database (eGRID) subregions [11]. A residual emissions factor is a multiplier used to calculate GHG emissions from purchased electricity, while excluding electricity generation from all voluntary renewable energy transactions, such as the purchase of Renewable Energy Certificates (RECs) [12]. Although U of I does not currently have any renewable energy transactions, the university may potentially pursue market transactions in the future, making the market-based method the most appropriate to maintain consistent methodology for prospective reporting.

U of I is in the Northwest Power Pool (NWPP) eGRID subregion, shown below in Figure 5. The primary source of energy in the NWPP is hydropower, followed by natural gas and coal. The most recent energy mix for the NWPP is shown in Figure 6. Thanks to the extensive use of renewable energy sources (i.e., hydro and wind), the NWPP has a lower emissions rate than the national average, which means that our Scope 2 emissions are lower than a similarly consumptive school located elsewhere in the country. The residual emissions factor for the NWPP is 0.281 kg CO_2e/kWh, which is the factor used to calculate U of I's Scope 2 emissions per the market-based method.

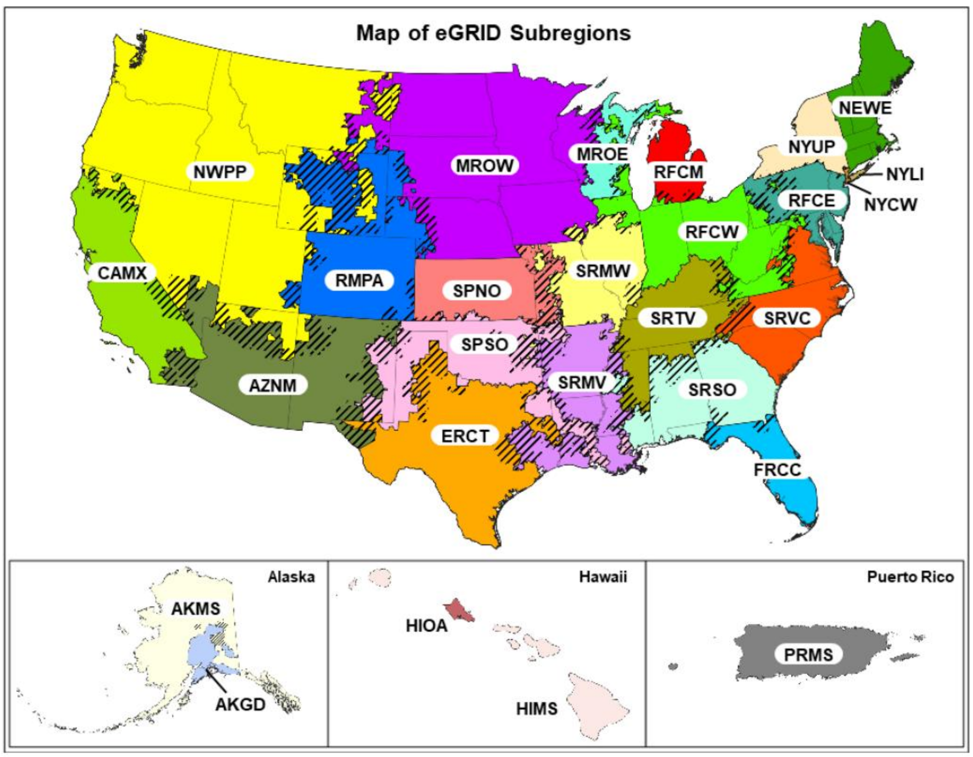


Figure 5*: Map of EPA eGRID subregions [11]. Crosshatching indicates that an area falls within overlapping eGRID subregions. U of I is in the NWPP subregion.*

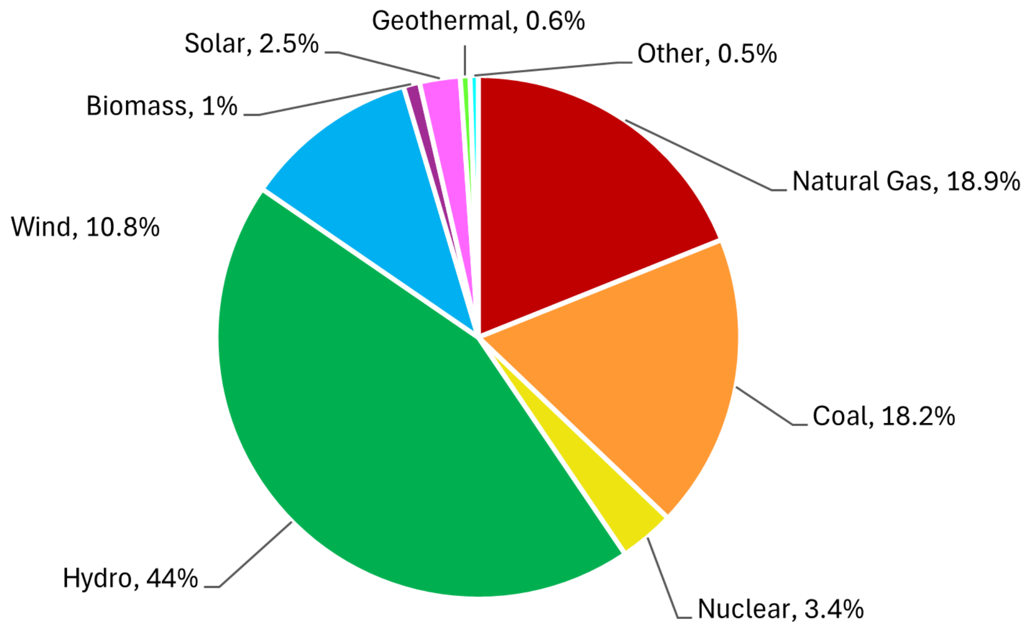


Figure 6*: NWPP eGRID subregion energy mix [13].*

	Unit	FY2023	FY2024
Total electricity purchased	kWh	45,233,573	43,466,870
Residual emissions factor	kg CO_2e/kWh	0.281254	0.281254
Total emissions	**Metric Tons CO_2e**	**12,722.13**	**12,272.44**

Table 9*: Scope 2 emissions from purchased electricity.*

Total FY2024 Scope 2 emissions are 12,272.44 metric tons CO_2e. Table 9 shows total purchased electricity and the residual emissions factor provided by SIMAP [12] used to calculate total emissions. In FY2024, the U of I emitted 3.5% fewer CO_2e emissions from electricity consumption than in FY2023.

Scope 3: Other Emissions

Scope 3 emissions include all other emissions that are attributed to U of I. This encompasses emissions from sources that are neither owned nor operated by U of I but are directly financed or linked to campus operations. Scope 3 emissions are considered "upstream" or "downstream" from the university, as the university did not directly produce them, but influenced or encouraged them, such as the emissions from employees and students commuting to campus or emissions from employee air travel to work events for which the university paid. Scope 3 emissions come from the following sources for which the U of I has data: commuting to and from campus, business travel, electrical transmission and distribution losses, food consumption, solid waste, and wastewater. All emissions were calculated in SIMAP in accordance with the GHG Protocol guidelines for Scope 3 emissions [14].

Commuting

Commuting to and from campus can result in GHG emissions, depending on the mode of transportation utilized. The Office of Sustainability's 2023 Sustainability Cultural Assessment was administered online through the survey software Qualtrics to the entire U of I population (i.e., all students, staff, and faculty) in the fall of 2023. Along with data on the sustainability values, attitudes, and behaviors of the campus population, the survey collected data on commuter behaviors. Participation in the survey was voluntary but was incentivized by the chance to win a gift card to a local store. Seven percent of the campus responded to the survey, which was statistically recognized as a representative sample. The commuter data was then averaged over each campus population group. Despite the rigor of the survey methodology used and the achievement of a representative sample, the survey data may not fully portray the true commuting habits of U of I since it is difficult to generalize behaviors to an entire population from a small sample of people. The data below can be considered a snapshot of commuter emissions for FY2024. Future commuter data collection should be improved to provide more accurate estimates of commuting emissions.

Moscow is a small town, encompassing less than 7 square miles. The typical commuting distance for the entire population of faculty, staff, and students is somewhere between 1 and 5 miles. Many students live less than 1 mile away from campus or live on campus, which greatly reduces their commuting emissions. Table 10 provides a breakdown of commuting behaviors for each campus group.

Campus Group	Number of Commuters	Automobile	Bike	Carpool	Electric Vehicle	Public Bus	Walk
Students	9,493	29%	28%	9%	1%	3%	30%
Faculty	583	58%	15%	8%	2%	3%	14%
Staff	1,108	58%	15%	8%	2%	3%	14%

***Table 10**: Number of commuters and percentage of mode of transport for students, faculty, and staff.*

GHG emissions from commuting were calculated using SIMAP. Total emissions from commuting for FY2024 are 1,435.05 tons of CO_2e. Figure 7 provides a comparison of emissions for each campus group for both FY2023 and FY2024. Commuting data reported in the FY2023 GHG Inventory is reused in this report for FY2024, as the commuting data was collected in September 2023 and falls within the timeframe of FY2024. Therefore, there are no differences in emissions from FY2023 to FY2024.

Staff and faculty account for most of the commuting emissions. Students are more likely to opt for lower-emission commuting modes, such as biking, walking, or carpooling. This may be due to proximity to campus, affordability, or convenience. On average, faculty and staff mostly drive vehicles to campus alone, commute throughout the year, and live further from campus.

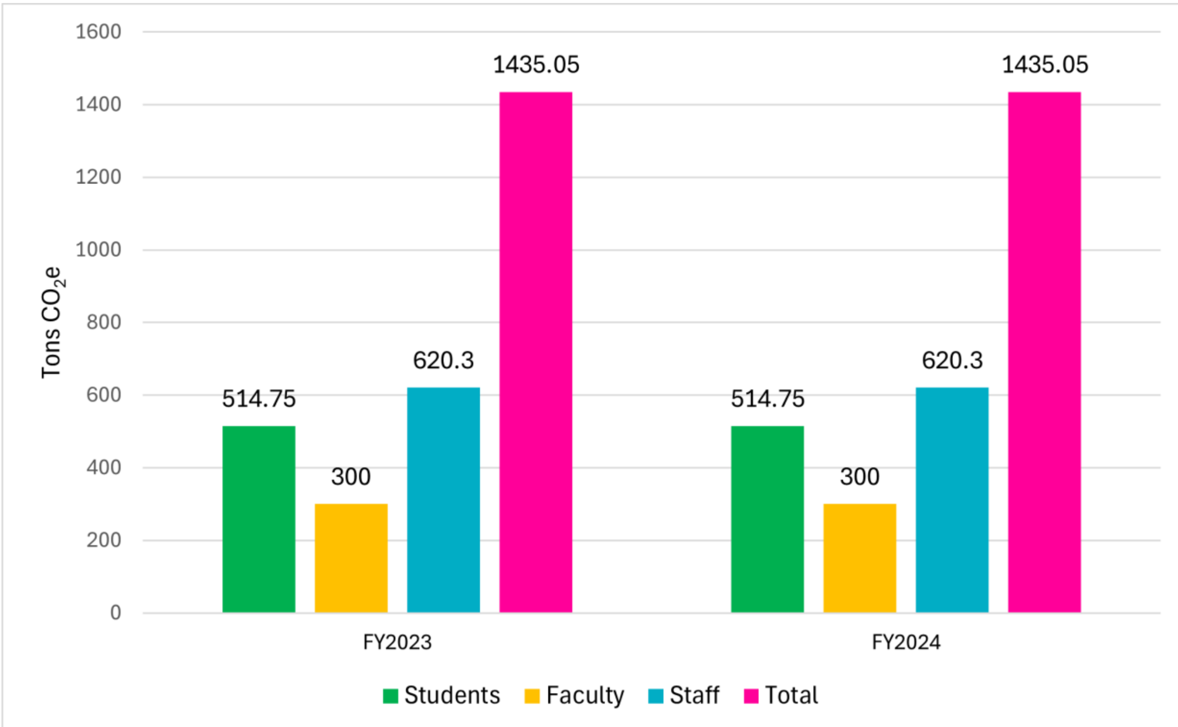


***Figure 7**: Emissions from commuting.*

U of I Financed Transportation

Directly financed transportation includes business trips on commercial aircraft and reimbursed personal mileage for faculty and staff, exclusive of university owned vehicles. Faculty and staff travel frequently for business, conferences, and other events, making air and passenger vehicle travel a significant part of university operations. Data on directly financed transportation was provided by the University Controller's Office. Transportation data only includes the distance between origins and destinations of trips, without accounting for any layovers or circuitous routes. Therefore, emissions estimates are lower than actuality. Regardless, this method for calculating GHG emissions related to business travel is standard practice in GHG reporting.

Emissions from airline and vehicle travel can differ based on modality, distance, equipment efficiency, and the number of breaks during travel. The EPA provides CO_2 emissions factors for passenger vehicles and short, medium, and long-haul airline travel [6]. We provide the EPA emissions factors to highlight that according to the 2024 EPA emissions factors, medium-haul air travel (between 300 and 2,300 miles) has the lowest CO_2 emissions factor, while passenger vehicle travel has the highest, as seen in Table 11.

These factors have all been decreasing over time as airlines and car manufacturers increase operating efficiency.

Travel Type	Distance Travelled (Miles)	Emissions Factor (kg CO_2/mile)
Air – Short Haul	< 300	0.207
Air – Medium Haul	>300, < 2,300	0.129
Air – Long Haul	> 2,300	0.163
Passenger Vehicle	any	0.306

***Table 11**: 2024 EPA emissions factors for business travel and commuting.*

Miles traveled by air and passenger vehicle and their associated emissions are in Table 12 below. Emissions were calculated using SIMAP's business travel emissions calculator, which provides a more accurate estimate by using both EPA emissions factors and the radiative forcing factor for air travel [15]. The radiative forcing factor is a multiplier used in travel emissions calculations to account for the higher GWP of emissions released at higher altitudes [16]. SIMAP's emissions factor for air travel is 0.16 kg CO_2e per mile, which is an average factor for short, medium, and long-haul trips [17]. SIMAP's private automobile emissions factor is 0.33 kg CO_2e per mile [17]. Total emissions for directly financed transportation from FY2024 were 6,933.41 tons of CO_2e, resulting from 16,292,250 miles traveled via air and vehicle.

Source	Category	Unit	FY2023	FY2024
Air Travel	Subtotal Miles	Miles	5,850,019	14,947,959
	Subtotal Emissions	Tons CO_2e	2,540.08	6,490.40
Private Automotive	Subtotal Miles	Miles	1,185,706	1,344,291
	Subtotal Emissions	Tons CO_2e	390.75	443.01
Combined Air & Private Automotive	Total Miles	Miles	7,035,725	16,292,250
	Total Emissions	**Metric Tons CO_2e**	**2,930.83**	**6,933.41**

***Table 12**: Directly financed transportation miles and emissions.*

Figure 8 provides a comparison of financed transportation emissions for FY2023 and FY2024. Total emissions, inclusive of both private automotive and air travel, increased from FY2023 to FY2024 by 136%. Emissions from air travel increased substantially. This could be due to an increase in nonstop flights between the Pullman-Moscow Regional Airport and the Boise Airport, making air travel between Moscow and Idaho's capital more convenient for U of I employees.

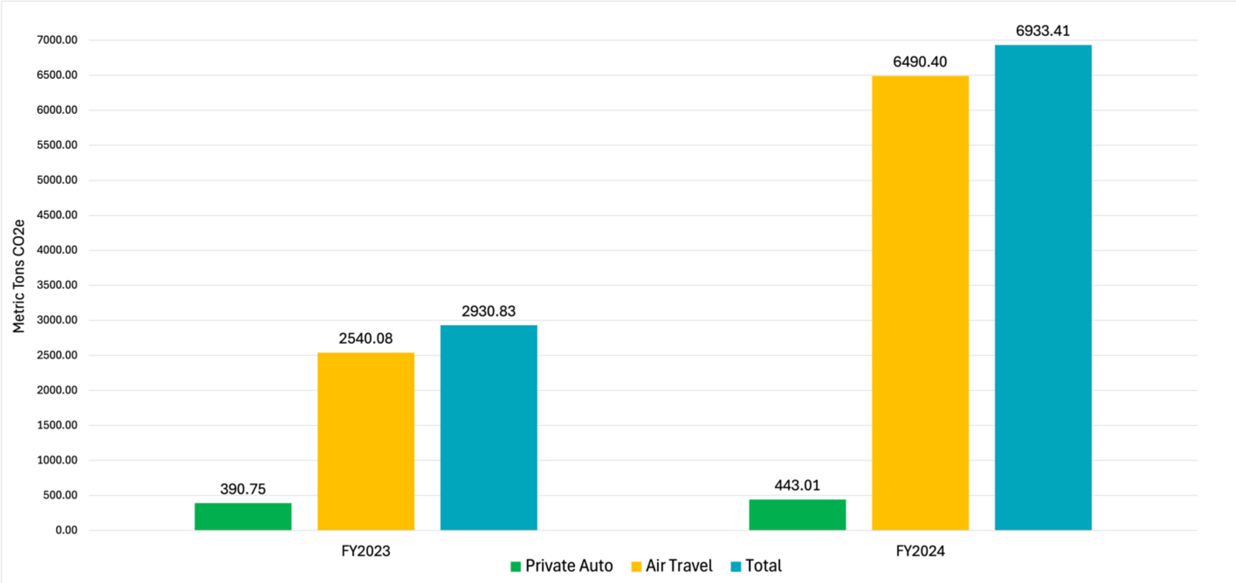


Figure 8: *Comparison of FY2023 and FY2024 directly financed transportation emissions.*

Transmission and Distribution Losses from Purchased Electricity

Emissions from transmission and distribution (T&D) inefficiencies estimate the energy lost when supplying customers with electricity. Losses come from energy dissipated in transformers, conductors, and other equipment used to transmit, transform, and distribute electrical power. Although typically difficult to measure, SIMAP provides a loss estimate that is an adjusted percentage based on the regional fuel mix of the Moscow campus location and the fuel mix of the NWPP subregion from the EPA eGRID subregion [13]. SIMAP's estimate is a 5.3% loss. Using the 5.3% value, emissions from T&D losses can be calculated using the same emissions factors used for Scope 2 emissions from purchased electricity, shown below in Table 13. Total emissions from T&D losses in FY2024 were 684.2 metric tons CO_2e. This amount is 4% lower than FY2023, due to the U of I consuming less electricity in FY2024.

Source	Unit	FY2023	FY2024
T&D Losses	kWh	2,397,379	2,303,744
Total Emissions	Kg CO_2	707,707	680,066
Total Emissions	**Metric Tons CO_2e**	**712.01**	**684.2**

Table 13*: T&D losses from purchased electricity.*

Food

Emissions from food production account for fertilizer application, livestock enteric fermentation, manure management, soil respiration, deforestation, and transportation [18]. For an accurate estimation, data on the total weight, type, sustainability practices, and growth/production location of purchased food was collected. Data was provided by Idaho Eats, U of I's food vendor (managed by Chartwells) for all food purchases made by them in FY2024. The food data includes all campus market and dining locations managed by Idaho Eats. Food purchases for independent food contractors (e.g. Einstein Bros Bagels, Qdoba, Chick-fil-A, Ace Sushi, and Firehouse Subs) are not included.

Total food weight was 737.11 metric tons. Figure 9 shows the weight of each food category consumed. Consumption by weight is largest for chicken, liquids, vegetables, and grains. Figure 10 shows the emissions from each food category. Total carbon emissions from food consumption were 3,351.34 metric tons of CO_2e. In general, meat has the highest emissions compared to the other food categories. Beef accounts for 39.67% of total food emissions but only 4.36% by weight, followed by chicken (31.12% of emissions, 32.16% by weight), and pork (6.48% of emissions, 3% by weight). Vegetables were the third most consumed food category by weight (13.54%) but only accounted for 1.63% of emissions.

Figure 11 provides a comparison between food weight and food emissions for both FY2023 and FY2024. Food emissions for FY2024 increased by 68% from FY2023.

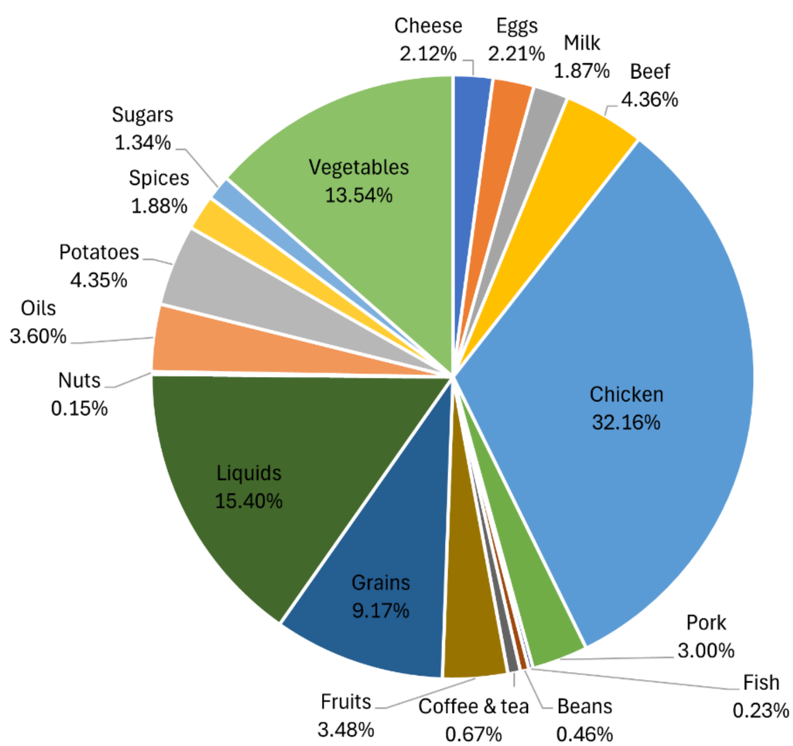


Figure 9: *Food consumption by weight of food category.*

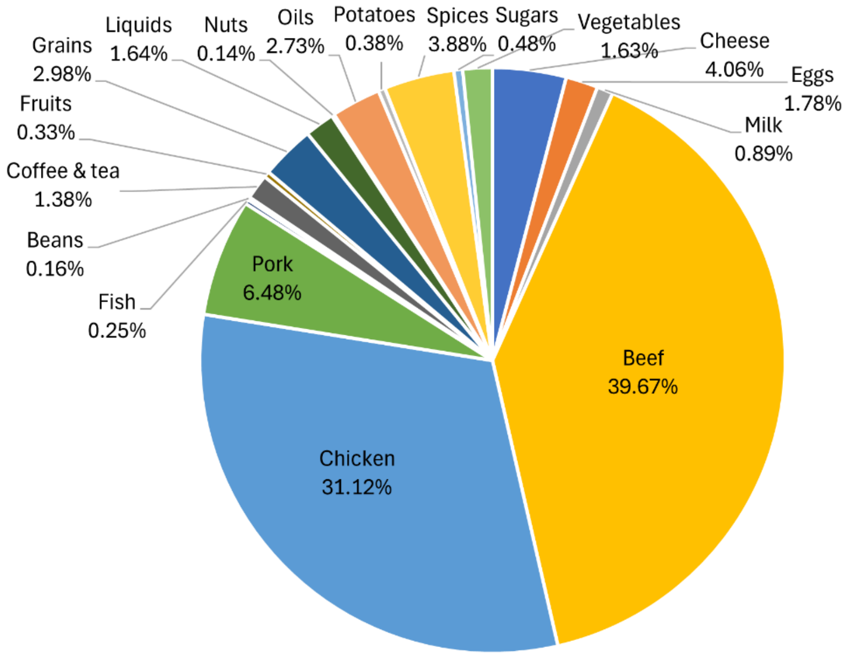


Figure 10: *Emissions from food consumption by food category.*

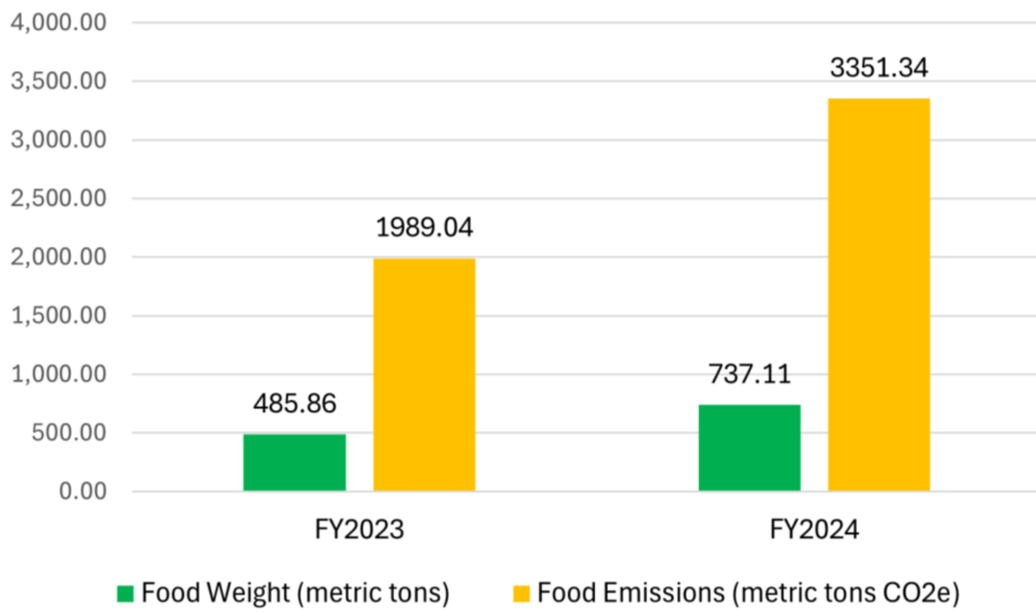


Figure 11: *Food weight and emissions comparison for FY2023 and FY2024.*

Solid Waste

Waste generation and disposal practices at the university produce GHG emissions. A significant portion of campus waste ends up in landfills. The single-stream recycling program launched in April of 2023, which means that this report is the first to include the impacts of recycling for the full reporting period. The average diversion rate in FY2024 was

19%, which includes single-stream recycling, cardboard, metal, E-Waste, books and scrap wood.

Solid waste is generally measured in short tons, with weight estimates based on the tipping fees from Inland North Waste (INW). INW collects unrecyclable municipal solid waste (MSW) and transports it 234 miles (one-way) to the Columbia Ridge Recycling and Landfill site south of Arlington, Oregon. At this landfill, organic waste decomposes anaerobically into CH_4, which is captured by the landfill's CH_4 recovery system to produce electrical power [19].

The recycling program was restructured and relaunched in FY2023 as a single-stream indoor collection program to reduce previous contamination levels. Recycling on campus is collected separately to minimize resource extraction and reduce the volume of landfill waste. INW also handles single stream recycling collection, transporting it 295 miles (one-way) to the Republic Services Materials Recovery Facility (MRF) in Seattle, Washington [20]. There, it is sorted, processed, and sold to mills for new production. Scrap metal is mostly sent to Pacific Steel and Recycling in Lewiston, Idaho, about 31 miles away.

Recycling avoids GHG emissions by keeping materials out of the landfill, but it is not considered an offset. This is because recycling does not result in a direct net loss of carbon to the atmosphere. Instead, the impact of recycling is reflected in reduced emissions from solid waste disposal, since recycling leads to less waste being sent to the landfill.

Emissions from solid waste generation are summarized in Table 14. Emissions from solid waste decreased by 1.8% from FY2023 to FY2024. Data was provided by the Recycling, Surplus, and Solid Waste (RSSW) division of Landscape and Exterior Services.

Source	Unit	FY2023	FY2024
Landfilled Solid Waste	Short ton	937	920
CH_4 Emissions*	kilogram	17,240	16,923
Total Emissions	**Metric tons CO_2e**	**480.99**	**472.15**

Table 14*: Emissions from landfilled solid waste.*
***CH_4** *has a GWP of 28.*

Wastewater

Wastewater treatment emissions vary depending on the treatment process used. The Moscow Wastewater Treatment Plant employs an anaerobic digestion process, which results in the release of CH_4 and N_2O. According to U of I's utility manager, McKinstry, U of I operations produced 116,733,047 gallons of wastewater in FY2024**.** This number is equivalent to the number of gallons of water drawn from the main wells on campus; McKinstry does not record actual wastewater volumes. Based on the emissions factor for anaerobic digestion, 116,733,047 gallons of wastewater produced 237.8 metric tons of CO_2e, a 10% decrease in emissions from FY2023. Table 15 provides details on U of I's wastewater emissions.

Source	Unit	Emissions Factor (kg CO_2e/unit)	FY2023	FY2024
Wastewater	gallon	2.04×10^{-3}	129,815,262	116,733,047
Total Emissions	**Metric tons CO_2e**		**264.45**	**237.80**

Table 15*: Emissions from wastewater generated in FY2023.*

Fuel- and Energy-Related Activities

The fuel- and energy-related activities (FERA) category accounts for the emissions that occur upstream from the direct combustion of a fuel or generation of energy and are not accounted for in Scope 1 calculations [21]. Upstream emissions can come from the extraction, production, and transportation of fuels like natural gas, or the materials used to make solar panels. SIMAP automatically calculates FERA emissions from Scope 1 stationary fuels of natural gas and solar production.

Although the emissions from the manufacturing of U of I's solar panels have already been emitted into the atmosphere, SIMAP calculates these upstream emissions for solar panels as a percentage of annual usage. This is because the FERA emissions factors consider the *lifecycle emissions* of a solar panel per kWh generated and are normalized by kWh produced. Hence, SIMAP calculates FERA emissions based on the kWh a solar panel produces per year.

Since GHG emissions accounting and the university's record-keeping have improved over time, FERA emissions for natural gas and solar were included in U of I's emissions inventorying for the first time in FY2023. FERA estimates are not yet available for Scope 1 stationary fuel of wood chips in SIMAP. FERA estimates for wood chips will likely be included in future reports.

Table 16 displays the FERA emissions that occurred upstream from U of I's stationary fuel use of natural gas and solar. Total FERA emissions for FY2024 are 3,229.01 tons of CO_2e, which is over one thousand tons CO_2e more than in FY2023. Overall, FERA emissions increased by 46% from FY2023 to FY2024. FERA emissions for natural gas increased dramatically because of the university's increased use of natural gas in FY2024. Solar-related FERA decreased because of faulty panel operations.

Source	FY2023	FY2024
FERA: Natural Gas	2,206.20 tons CO_2e	3,225.28 tons CO_2e
FERA: Solar – Electric	6.51 tons CO_2e	3.73 tons CO_2e
Total FERA Emissions	**2,212.71 tons CO_2e**	**3,229.01 tons CO_2e**

***Table 16**: FERA emissions.*

Scope 3 Categories Not Addressed

There are some Scope 3 categories in SIMAP that we are unable to address due to a lack of data. Table 17 provides these categories. These categories account for the upstream emissions resulting from the extraction, production, and transportation of the following: goods and services purchased by the university; university owned or managed assets; and goods and services sold by the university. At this time, U of I does not have a purchasing system that can provide the data needed to calculate emissions for these categories. We hope to include these categories in future reports as data collection strategies improve.

Relevant Scope 3 categories not addressed	Emissions Source	Data explanation
Purchased goods and services	Emissions that occur upstream of the institution's purchases (extraction, production, and transportation of purchased goods and services)	Limited production data for paper or other office supplies
Capital goods	Emissions that occur upstream of purchased products (including processing of raw materials and manufacturing)	No production data for most capital goods (construction, equipment, machinery, etc.)
Upstream transportation and distribution	Emissions from the final delivery of products from the institution's direct suppliers	No data on the transportation or distribution of purchased products
Upstream leased assets	Emissions from the operation of assets that are leased by the institution (offices or vehicles)	No data on the operation of assets leased by the institution
Downstream transportation and distribution	Emissions from the transportation and distribution of products sold by the institution in vehicles and facilities not owned or controlled by the institution	No data on the transportation or distribution of products sold

Downstream leased assets	Emissions from the operation of assets that are owned by the institution and leased to other entities (offices or vehicles)	No data on the operation of assets owned by the institution and leased to other entities
Franchises	Emissions from the operation of franchises (any entity licensed to sell the institution's goods or services), including franchised campus dining locations (e.g., Einstein Bros Bagels and Qdoba)	No data from on-campus franchises of the goods or services sold
Investments	Emissions from the operation of institutional investments	No data on the operation of investments (e.g. equity and debt investments or project finance)

***Table 17**: Scope 3 categories that are not addressed in this report.*

Cumulative Scope 3 Emissions

Figure 12 displays the total emissions for Scope 3. Total Scope 3 emissions for FY2024 are 16,342.96 tons of CO_2e. Emissions from directly financed travel are the largest source of emissions for Scope 3, followed closely by FERA emissions. Food consumption and commuting are also significant sources of emissions. T&D losses, solid waste, and wastewater are smaller sources of emissions in comparison. Since FY2023, Scope 3 emissions increased by 63% in FY2024.

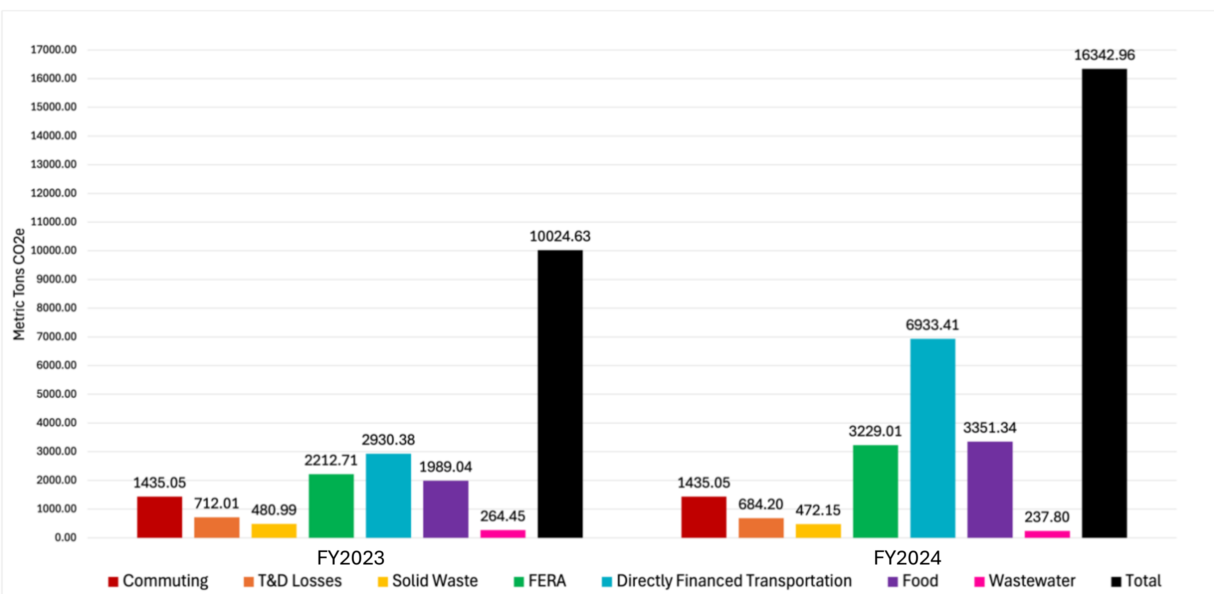


***Figure 12:** Cumulative Scope 3 emissions.*

Total University Emissions Profile

Combining emissions from all three scopes provides the total university carbon footprint. Due to reporting inconsistencies in previous GHG inventory reports, FY2023 is the new emissions baseline and will be used for comparison in future reports. Total campus emissions in FY2024 are 42,767.60 tons of CO_2e. Table 18 and Figure 13 both provide a breakdown of the total emissions by scope. Scope 1, 2, and 3 emissions account for 33%, 29%, and 38% of the total emissions profile, respectively.

Scope	Unit	FY2023	FY2024
Scope 1	Tons CO_2e	11,985.10	14,152.20
Scope 2	Tons CO_2e	12,722.13	12,272.44
Scope 3	Tons CO_2e	10,025.08	16,342.96
Total emissions	**Tons CO_2e**	**34,732.31**	**42,767.60**

***Table 18**: Total emissions by scope.*

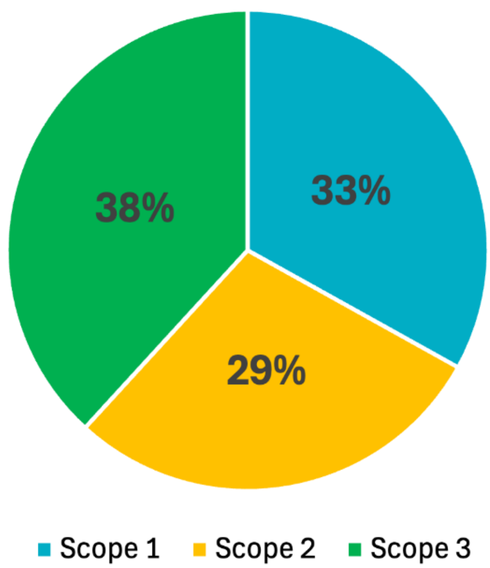


***Figure 13:** Total university emissions by scope.*

The breakdown of the total GHG emissions in FY2024 are shown below in Figure 14. The largest sources of campus emissions are electricity consumption (29%), and stationary fuel use of both natural gas and wood chips (26%).

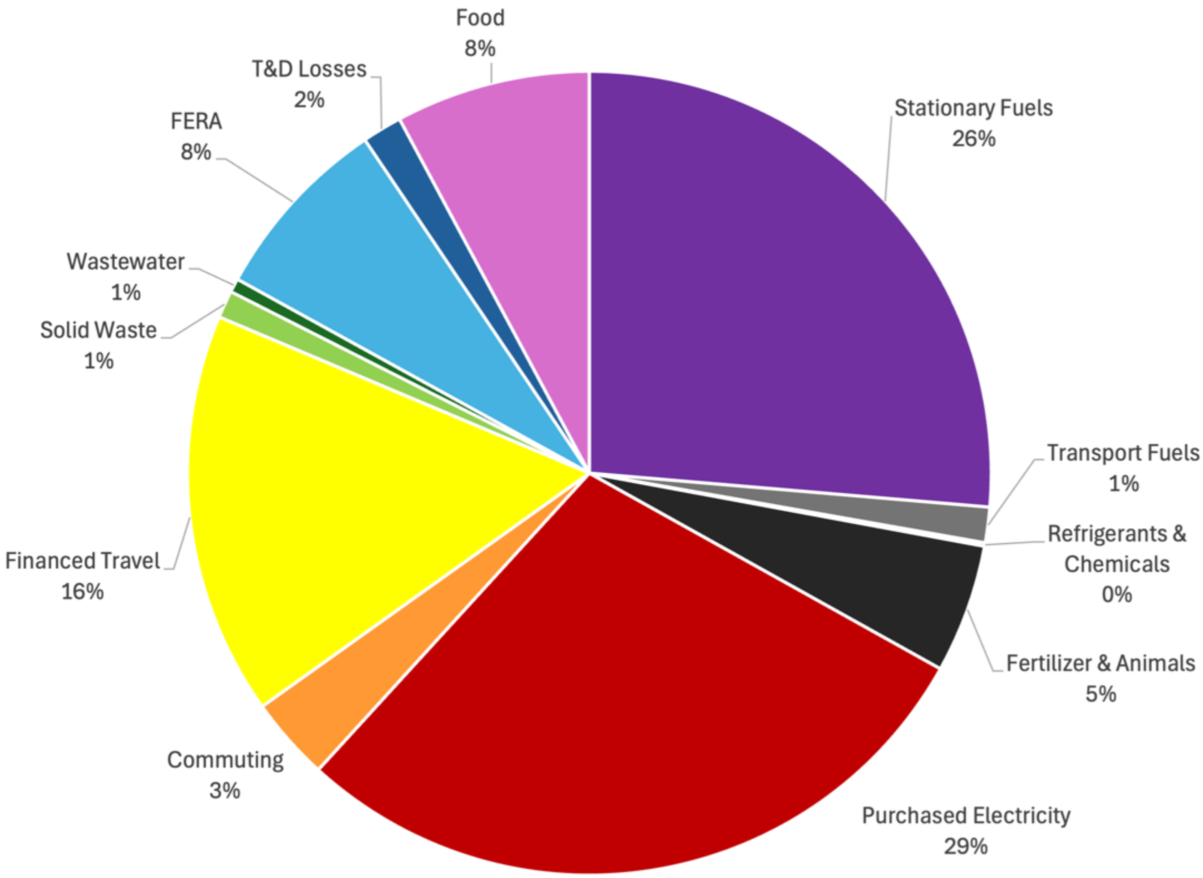


Figure 14: *FY2024 emissions profile.*

Normalization

Carbon footprint is more often an indicator of campus size than performance, complicating the ability to make footprint comparisons between institutions. To account for these discrepancies and facilitate more meaningful benchmarking, results can be normalized per gross square footage and per full-time equivalent student population.

Emissions per square foot

As of FY2024, estimated occupied space of the Moscow campus is 4,552,494 square feet, which includes all farms and other Moscow locations. Total emissions for FY2024 are 9.4 tons of CO_2e per square foot. This is a 22.6% increase from FY2023, as emissions per square foot were 7.67 tons of CO_2e in FY2023.

Emissions per full-time equivalent student

As of FY2024, the population of full-time equivalent students is 9,461 students. Total emissions for FY2024 are 3.78 tons of CO_2e per full-time equivalent student. This is a 0.3% decrease from FY2023, as emissions per full-time equivalent student was 3.79 tons of CO_2e in FY2023.

Alternative Energy on Campus

U of I has two alternative energy sources on campus that help the university avoid emitting GHG emissions associated with electricity production: the steam turbines at the District Energy Plant and the Integrated Research and Innovation Center (IRIC) solar array.

In 2022, the university added three electricity-producing steam turbines to the District Energy Plant as part of a major renewable energy initiative to improve on-site energy production. As wood and natural gas are burned in the boilers of the energy plant to heat campus, steam is produced. Instead of simply being released into the atmosphere, the steam is then captured and used to turn the blades of the turbines and generate electricity for campus. The District Energy Plant produces over 280 million pounds of steam annually, which is then converted to energy through the steam turbines. This cogeneration process capitalizes on the byproducts of the existing heat generation process and helps avoid the release of additional GHG emissions associated with producing electricity [22].

In FY2024, the District Energy Plant's three turbines produced 3,869,013 kWh of electricity for the university, offsetting 8.14% of the university's total energy demand. Cogeneration data was provided by McKinstry. The turbines are not currently running at full speed to ensure that steam pressure remains consistent. Regardless, the turbines exceed the facility's electrical needs, making the District Energy Plant the first carbon-negative building on campus.

Along with the steam turbines, the IRIC solar array produces electricity for our campus and helps U of I avoid emitting additional GHG emissions. Solar panels are a renewable energy source, as they convert sunlight into electrical energy and do not release GHG emissions while creating energy. The IRIC photovoltaic solar array is the university's first, installed in 2019 to further reduce U of I's GHG emissions from electricity consumption. This array, consisting of 368 panels funded by 120 donors including ASUI and the Office of the President, has the potential to generate up to 132.2 kW per hour. This accounts for up to 15% of the IRIC's high energy demand during peak usage. After completing all the necessary power purchasing agreements, the solar array was turned on in February of 2022.

In FY2024, the IRIC solar array produced 167,856 kWh of electricity, making up 0.35% of the university's total electricity consumption. By producing 167,856 kWh of electricity, the IRIC solar array avoided emitting 117 tons of CO_2e. This production is far lower than usual. In FY2023, the solar array produced 293,161 kWh of electricity; the sharp decrease in kWh produced indicates that the solar array is not functioning correctly (this was subsequently confirmed by McKinstry). Future efforts should be directed at repairing and maintaining the

IRIC solar array to ensure U of I is taking advantage of its zero-emissions electricity production. Solar array data was obtained from McKinstry.

Carbon Sinks: Non-Additional Sequestration & Composting

A carbon sink is something that absorbs and stores carbon dioxide from the atmosphere. Natural carbon sinks, such as forests, oceans, and wetlands, absorb more carbon than they release through processes like photosynthesis or oceanic carbon absorption. Rinker Rock Creek Ranch, Taylor Wilderness Research Station, and the U of I Experimental Forest are university research stations and might be considered natural carbon sinks (depending on management practices). However, accounting for the carbon absorption from these sinks neither adds nor subtracts to U of I's GHG footprint. This is because carbon sequestration does not result in a net increase in carbon storage beyond what would have occurred naturally – it is not reducing emissions but only keeping additional carbon from being released into the atmosphere. For the purposes of GHG accounting, this is known as non-additional sequestration. For additional information, the FY2023 GHG emissions inventory provides an in-depth explanation of non-additional sequestration using Rinker Rock Creek Ranch as an example.

In August of 2024, the U of I installed a composting system on campus, turning food waste from dining operations into a nutrient-rich soil amendment. Unlike non-additional sequestration, composting food waste *does* decrease the U of I's GHG footprint, as composting results in carbon storage and avoids the release of CH_4 emissions when managed properly. Moving forward, composting will be included as a carbon sink in the university's GHG emissions inventories.

Conclusions

Climate Change & Weather in Idaho

According to the National Aeronautics and Space Administration (NASA), the earth is warming at an unprecedented rate, a phenomenon known as climate change. Since recordkeeping began in 1880, the ten most recent years have been the warmest years on record, with 2024 being the warmest ever recorded [23]. Overall, the earth was about 2.65 degrees Fahrenheit warmer in 2024 than in the late 19th century [24]. Although our planet has experienced climate fluctuations throughout its history, the current global warming trend is occurring at an alarmingly fast rate, directly resulting from human activities [25]. Namely, the burning of fossil fuels and other industrial activities that fuel our modern lifestyles emit GHGs into the atmosphere, like carbon dioxide, methane, nitrous oxide, chlorofluorocarbons (CFCs), and water vapor. These GHGs trap heat around our planet and slow heat loss to space, creating a greenhouse effect around the earth and increasing average temperatures across its surface.

The effects of climate change are already occurring and will worsen in the future if we continue to emit GHGs at our current rate. Effects include sea ice loss, accelerated sea level rise, and more frequent, destructive weather phenomena, such as hurricanes, heat waves, tsunamis, tornadoes, droughts, wildfires, etc. [26]. Climate change is also unevenly impacting precipitation patterns, with some regions experiencing increased precipitation while others experience drought. In the United States, the Northwest region will experience significant changes in the timing of peak flows in rivers and streams, which will reduce fresh water supplies and worsen competing demands for water. Increased incidences and severity of wildfires, heat waves, erosion, flooding, insect outbreaks, and tree diseases are also being driven by climate change and causing widespread forest die-off [27].

In Idaho specifically, the annual average temperature has risen nearly 2 degrees Fahrenheit since 1900, which has spurred an array of dramatic changes in the state's overall climate [28]. Summer precipitation has significantly decreased, while winter and spring have increased [28]. However, winter precipitation is now more likely to fall as rain instead of snow due to warmer temperatures [28]. This has led to large reductions in annual snowpack and earlier spring snowmelt. Drought and extreme weather events (e.g., floods, heat waves, cold snaps, high winds, and extreme precipitation) in Idaho are growing issues and are projected to worsen in the future [29]. Additionally, climate-induced weather changes have heightened the risk of larger and more severe wildfires in Idaho, as well as lengthening the overall fire season [28]. Climate projections suggest that the average annual temperatures in Idaho can increase by 4.7 to 10 degrees Fahrenheit by the end of the century [28]. These changes will impact nearly every facet of our lives – from our agriculture, our drinking water availability, and even the way we recreate in the summers and winters.

Comparisons between FY2023 & FY2024

FY2024 produced more emissions than FY2023, with a total of 42,767.60 metrics tons of CO_2e. This is an increase of 8,035.29 tons of CO_2e from the total 34,732.1 tons of CO_2e produced in FY2023, resulting in a 23.13% increase in total emissions. The category that saw the greatest increase - both in absolute emissions and as a percentage - was financed travel (137% increase), with natural gas use (46%), food (68%), and FERA (46%) also contributing more emissions to the total emissions profile in FY2024 than in FY2023. The total emissions for FY2023 and FY2024 are shown by category in Figure 15. Detailed comparisons between emissions from FY2024 and FY2023 are broken into scopes, categories, and subcategories in Appendix C.

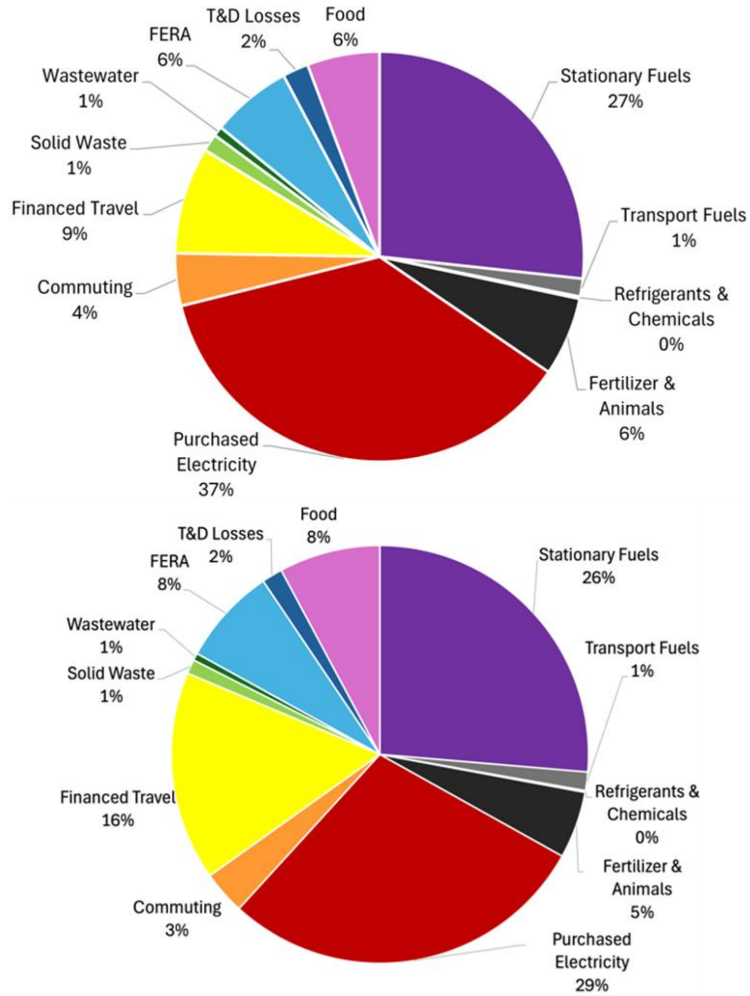


Figure 15: *Total emissions profiles for FY2023 (top) vs. FY2024 (bottom)*

Scope 1 emissions increased from 11, 985.10 tons of CO_2e in FY2023 to 14,152.20 tons of CO_2e in FY2024 (an 18.08% increase). Emissions from cogeneration of energy from the Energy Plant and campus buildings increased, while emissions from wood chips decreased. This is likely due to infrastructure failures leading to shut-downs at the District Energy Plant, which led to a shift from the carbon-dioxide-neutral biomass fuel to emission-intensive natural gas. Scope 2 emissions decreased by 3.53% from FY2023 to FY2024, the only scope that had overall emission reductions. Scope 3 emissions jumped from 10,025.08 tons of CO_2e in FY2023 to 16,342.96 tons of CO_2e - a significant increase of 63.03%. The greatest contributor to this increase is the sharp increase in directly financed transportation, with air travel experiencing an increase of 155.52%, and private automotive travel experiencing an increase of 13.37%.

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University of Idaho

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University of Idaho Facilities

Idaho Eats
Chartwells Higher Education

Landscape Division
University of Idaho Facilities

McKinstry
University of Idaho Utility Partner

SIMAP Program
University of New Hampshire Sustainability Institute

Waste Management Division
University of Idaho Facilities

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[26] The Intergovernmental Panel on Climate Change, “AR6 Synthesis Report: Climate Change 2023,” *United Nations Environment Programme,* 2023. https://www.ipcc.ch/report/sixth-assessment-report-cycle/

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[28] USDA Climate Hubs, “Climate Change Impacts in the Northwest,” U.S. Department of Agriculture, 2024. https://www.climatehubs.usda.gov/hubs/northwest/topic/climate-change-impacts-northwest

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Appendix A: U of I Buildings & Utility Sources

U of I buildings that have electricity and natural gas and lie within the operational boundary of this report are listed below.

The second column displays connectivity to the District Energy Plant's steam network, which is indicated by "YES" or "NO".

The third column displays the billing designation for natural gas usage. "Campus" means the building receives natural gas through a main campus feed (i.e., either from the District Energy Plant or the main natural gas feed from Avista Utilities) and is billed collectively with all campus buildings. "Additional" means the building sources its natural gas independently of all other campus buildings and thus is billed independently through Avista Utilities. "N/A" means the building does not use natural gas.

The fourth column displays the billing designation for electricity usage. "East/West Feeds" means the building receives its electricity from the campus main electricity feeds and is billed collectively. "Additional" means the building does not receive its electricity from the main feeds and thus is billed independently through Avista Utilities.

Building	Steam	Natural Gas Billing	Electric Billing
ADMINISTRATION BUILDING	YES	Campus	East/West Feeds
AGRICULTURAL BIOTECHNOLOGY	YES	Campus	East/West Feeds
AGRICULTURAL EDUCATION	NO	Campus	East/West Feeds
ANIMAL PAVILION & MEATS LAB	NO	Campus	East/West Feeds
AQUACULTURE INSTITUTE	NO	Campus	East/West Feeds
AQUACULTURE RESEARCH INSTITUTE	NO	Additional	East/West Feeds
AQUACULTURE WET LAB	NO	Campus	East/West Feeds
ARBORETUM BARN	NO	N/A	Additional
ARCHIE PHINNEY HALL	YES	Campus	East/West Feeds
ART & ARCH INTERIOR DESIGN	YES	Campus	East/West Feeds
ART & ARCHITECTURE BUILDING	YES	Campus	East/West Feeds
ART & ARCHITECTURE EAST	NO	Campus	Additional
ART & ARCHITECTURE NORTH	YES	Campus	East/West Feeds
ART & ARCHITECTURE SOUTH	YES	Campus	East/West Feeds
ASUI KIBBIE ACTIVITY CTR / VAC	NO	Additional	East/West Feeds
AVS RESEARCH HAY BARN	NO	Campus	Additional
BEEF WORKING FACILITY	NO	Campus	Additional
BLAKE HOUSE	YES	Campus	East/West Feeds

BOOKSTORE/US POST OFFICE	NO	Campus	East/West Feeds
BRUCE M. PITMAN CENTER	YES	Campus	East/West Feeds
BUCHANAN ENGINEERING LAB	YES	Campus	East/West Feeds
CAMPUS STORAGE #1	NO	Campus	East/West Feeds
CAROL RYRIE BRINK HALL (FOCE)	YES	Campus	East/West Feeds
CHEMICAL STORAGE	NO	Campus	East/West Feeds
CHIP FACILITY SCALE HOUSE	NO	Campus	East/West Feeds
CHIP STORAGE/DRYING FACILITY	NO	Campus	East/West Feeds
CLASS ANNEX	NO	Campus	Additional
COLLEGE OF EDUCATION BUILDING	YES	Campus	East/West Feeds
COLLEGE OF NATURAL RESOURCES	YES	Campus	East/West Feeds
EARLY CHILDHOOD LRNG CENTER	NO	Campus	East/West Feeds
ENGINEERING ANNEX	NO	Campus	East/West Feeds
ENGINEERING/PHYSICS BLDG	YES	Campus	East/West Feeds
ENVIRONMENTAL HEALTH & SAFETY	NO	Campus	East/West Feeds
FACILITIES EQUIPMENT STORAGE	NO	Campus	East/West Feeds
FACILITIES GARAGE	NO	Campus	East/West Feeds
FACILITIES LATHHOUSE/GRNHOUSE	NO	Campus	East/West Feeds
FACILITIES SERVICES	NO	Campus	East/West Feeds
FACILITIES STORAGE	NO	Campus	East/West Feeds
FARM OPERATIONS SHOP	NO	Additional	Additional
FARM RESIDENCE - BEEF	NO	Campus	Additional
FARM STORAGE BUILDING #2	NO	Campus	Additional
FEED & STORAGE POULTRY 1	NO	Campus	Additional
FOOD RESEARCH CENTER	YES	Campus	East/West Feeds
GAUSS-JOHNSON ENGINEERING LAB	YES	Campus	East/West Feeds
GERTRUDE L. HAYS HALL (Alumni Center)	YES	Campus	East/West Feeds
GIBB HALL	YES	Campus	East/West Feeds
GOLF CART STORAGE SHED	NO	Campus	East/West Feeds
GOLF COURSE CLUBHOUSE	NO	Campus	Additional
GOLF COURSE PUMPHOUSE	NO	Campus	East/West Feeds
GOLF COURSE STORAGE BLDG	NO	Campus	East/West Feeds
GRADUATE ART STUDIO	YES	Campus	East/West Feeds
HAMPTON MUSIC BUILDING	YES	Campus	East/West Feeds
HARTUNG THEATRE	NO	Campus	East/West Feeds
HAZARDOUS MATERIALS STORAGE	NO	Campus	East/West Feeds
HOLM CENTER	NO	Campus	East/West Feeds
HOUSING STORAGE	NO	Additional	East/West Feeds

HUMAN RESOURCES	NO	Campus	Additional
I TANK	NO	Campus	East/West Feeds
IDAHO ARENA	YES	Campus	East/West Feeds
IDAHO COMMONS	YES	Additional	East/West Feeds
IDDINGS AG SCIENCE BUILDING	YES	Campus	East/West Feeds
INTEGRATED RSRCH INNOVATION CNTR	YES	Campus	East/West Feeds
INTERMODAL TRANSIT CENTER	NO	Campus	East/West Feeds
IRRIGATION SYSTEM PUMPHOUSE	NO	Campus	East/West Feeds
J. A. ALBERTSON	YES	Campus	East/West Feeds
J.W. MARTIN LAB	NO	Campus	East/West Feeds
JANSSEN ENGINEERING BLDG	YES	Campus	East/West Feeds
KIBBIE WEST TICKET BOOTH	NO	Campus	East/West Feeds
LES SMALL ENGINE SHOP	NO	Campus	East/West Feeds
LIBRARY	YES	Campus	East/West Feeds
LIFE SCIENCES SOUTH	YES	Campus	East/West Feeds
LLC - CNR - BLDG 5	YES	Campus	East/West Feeds
LLC - ENGINEERING - BLDG 7	YES	Additional	East/West Feeds
LLC - GAULT - BLDG 6	YES	Campus	East/West Feeds
LLC - GEM - BLDG 1	YES	Campus	East/West Feeds
LLC - SAGE - BLDG 3	YES	Campus	East/West Feeds
LLC - SCHOLARS - BLDG 8	YES	Campus	East/West Feeds
LLC - SYRINGA - BLDG 2	YES	Campus	East/West Feeds
LLC - UPHAM - BLDG 4	YES	Campus	East/West Feeds
LONGHOUSE	NO	Campus	East/West Feeds
MACHINE SHED	NO	Campus	East/West Feeds
MARY E. FORNEY HALL	YES	Campus	East/West Feeds
MCCLURE HALL	YES	Campus	East/West Feeds
MCCONNELL HALL	YES	Additional	East/West Feeds
MEMORIAL GYM	YES	Campus	East/West Feeds
MENARD LAW BUILDING	YES	Campus	East/West Feeds
METABOLISM/SURGERY BUILDING	NO	Campus	East/West Feeds
MIKE RYAN TRACK & FIELD OFFICE	NO	Campus	East/West Feeds
MINES BUILDING	YES	Campus	East/West Feeds
MONSON WORKING FACILITY	NO	Campus	East/West Feeds
MORRILL HALL	YES	Campus	East/West Feeds
NATIVE AMERICAN/MIGRANT ED CTR	YES	Campus	East/West Feeds
NIATT CCVT STORAGE BUILDING	NO	Campus	East/West Feeds
NICCOLLS BUILDING	YES	Campus	East/West Feeds

OBSERVATORY	NO	N/A	Additional
PESTICIDE STORAGE	NO	Campus	East/West Feeds
PHYSICAL EDUCATION BLDG	YES	Campus	East/West Feeds
POULTRY HILL WAREHOUSE	NO	Campus	Additional
PREEC GREENHOUSES (4 UNITS)	YES	Campus	East/West Feeds
PUBLIC SAFETY & SECURITY	NO	Campus	East/West Feeds
PUMPHOUSE 5	NO	Campus	East/West Feeds
PUMPHOUSE 9	NO	Campus	East/West Feeds
RADIATION STORAGE BUILDING	NO	Campus	East/West Feeds
RADIO-TV CENTER	NO	Campus	Additional
RECLAIM WATER CHLORINATION BLD	NO	Campus	East/West Feeds
RECYCLING/SURPLUS	NO	Campus	East/West Feeds
RENFREW	YES	Campus	East/West Feeds
RIDENBAUGH HALL	YES	Campus	East/West Feeds
SEED POTATO	NO	Campus	East/West Feeds
SHOUP HALL	YES	Campus	East/West Feeds
SOUTH CAMPUS CHILLER PLANT	NO	Campus	East/West Feeds
SOUTH HILL COMMUNITY CENTER	NO	Campus	East/West Feeds
STUDENT HEALTH CENTER	YES	Campus	East/West Feeds
STUDENT RECREATION CENTER	YES	Campus	East/West Feeds
TARGHEE HALL	NO	Campus	Additional
TEACHING AND LEARNING CENTER	YES	Campus	East/West Feeds
THEOPHILUS TOWER	YES	Additional	East/West Feeds
TRANSFORMER STORAGE	NO	Campus	East/West Feeds
UI SWIMMING CENTER	YES	Campus	East/West Feeds
UNIV EVENTS/BOOKSTORE STORAGE	NO	Additional	East/West Feeds
UNIVERSITY ADVANCEMENT ANNEX	NO	Campus	East/West Feeds
UNIVERSITY ENERGY PLANT	YES	Campus	East/West Feeds
UNIVERSITY HOUSE	NO	Campus	East/West Feeds
UNIVERSITY VEHICLE STORAGE	NO	Campus	East/West Feeds
USDA INCINERATOR	NO	Campus	Additional
USDA RESEARCH BARN	NO	Campus	Additional
VEHICLE RESEARCH LAB	YES	Campus	East/West Feeds
WALLACE RESIDENCE- BALLARD	YES	Campus	East/West Feeds
WALLACE RESIDENCE- COMMON	YES	Additional	East/West Feeds
WALLACE RESIDENCE- GOODING	YES	Campus	East/West Feeds
WALLACE RESIDENCE- STEVENSON	YES	Campus	East/West Feeds
WALLACE RESIDENCE- WILLEY	YES	Campus	East/West Feeds

WICKS FIELD STORAGE & RESTROOM	NO	Campus	East/West Feeds
WWAMI MEDICAL EDUCATION BLDG	NO	Campus	Additional
YARD CONTAINERS - LARGE	NO	Campus	East/West Feeds
YARD CONTAINERS - SMALL	NO	Campus	East/West Feeds

Appendix B: Changing Climate

It is important to consider the changes in temperature when comparing FY2023 and FY2024 GHG footprints. Figure 16 shows the average monthly temperatures for FY2023 and FY2024. The average annual temperature in FY2023 was 48.37 degrees Fahrenheit; FY2024 was 48.8 degrees Fahrenheit [30]. The slight increase in average annual temperature from FY2023 to FY2024 may have also contributed to the increase in U of I's GHG footprint.

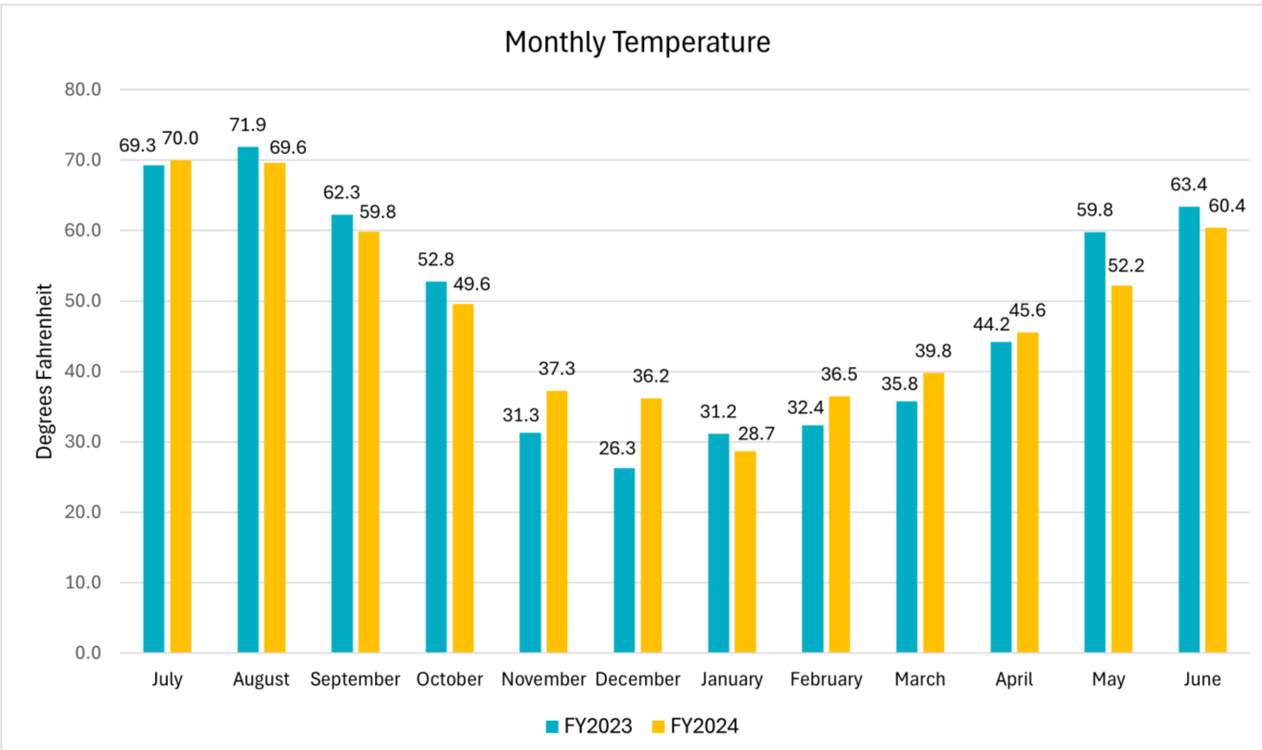

Figure 16: *Average monthly temperatures for FY2023 and FY2024. Data from Weather Underground – Pullman Moscow Regional Airport Station.*

Appendix C: FY2023 & FY2024 Comparison Data

Context & Data Inclusion

Previous GHG inventory reports and AASHE STARS reports used 2005 as the baseline year for emissions accounting. 2005 will remain the baseline year for future AASHE STARS reporting efforts since the dataset from 2005 meets reporting requirements for that program. However, due to missing data and methodological inconsistencies in previous GHG reports, FY2023 was determined to be the new baseline for internal GHG reporting moving forward.

The following table was created for comparison and benchmarking. Data is separated out by Scope and section with data from the FY2023 inventory and this report. In Table 19, reductions in emissions are noted in green. Increases in emissions are noted in orange.

Source	FY2023 Emissions (metric tons)	FY2024 Emissions (metric tons)	Absolute Change (metric tons)	Percent Change (+/-)
SCOPE 1	11985.10	14152.20	2167.10	18.08
Stationary Fuels	9278.78	11267.90	1989.12	21.44
Energy Plant (cogeneration)	2958.22	4668.46	1710.24	57.81
Campus buildings	2504.25	3317.20	812.95	32.46
Wood chips (cogeneration)	3816.31	3282.24	-534.07	-13.99
Transport Fuels	490.43	610.44	120.01	24.47
Gasoline	281.37	357.70	76.33	27.13
Diesel	208.81	252.26	43.45	20.81
Biodiesel	0.25	0.48	N/A	N/A
Animals and Fertilizer	2156.30	2215.21	58.91	2.73
Beef cows	194.61	249.32	54.71	28.11
Dairy cows	1829.88	1829.88	0.00	0.00
Horses	1.74	2.90	1.16	66.67
Sheep	125.79	128.65	2.86	2.27
Fertilizer	4.28	4.46	0.18	N/A
Refrigerants and Chemicals ✶	59.59	58.65	-0.94	-1.58
HCFC-22	17.23	6.61	-10.62	-61.64
R-404A	42.36	44.37	2.01	4.75
R-410A	Not Used	7.67	N/A	N/A
SCOPE 2	12722.13	12272.44	-449.69	-3.53
Purchased Electricity	12722.13	12272.44	-449.69	-3.53
SCOPE 3	10025.08	16342.96	6317.88	63.02
Commuting ✶ *Same Data Used*	1435.05	1435.05	0.00	0.00
Students	514.75	514.75	0.00	0.00
Faculty	300.00	300.00	0.00	0.00
Staff	620.30	620.30	0.00	0.00
Financed Travel ✶	2930.83	6933.41	4002.58	136.57
Air travel	2540.08	6490.40	3950.32	155.52
Private Automotive	390.75	443.01	52.26	13.37
T&D Losses from Purchased Electricity	712.01	684.20	-27.81	-3.91
Food	1989.04	3351.34	1362.30	68.49
Solid waste	480.99	472.15	-8.84	-1.84
Wastewater ✶	264.45	237.80	-26.65	-10.08
FERA	2212.71	3229.01	1016.30	45.93
Natural gas	2206.20	3225.28	1019.08	46.19
Solar-Electric	6.51	3.73	-2.78	-42.70
Demographics				
Emissions per square foot	7.67	9.4	1.73	22.56
Emissions per student	3.79	3.78	-0.01	-0.26
TOTAL REPORTED EMISSIONS	**34732.31**	**42767.60**	**8035.29**	**23.13**

Table 19*: FY2023 and FY2024 GHG comparison.*
**Reductions in emissions are green. Increases in emissions are orange. Low confidence data due to data collection challenges and changing methodology is noted with a star (*).*

Appendix D: Raw Data for FY2023 and FY2024

FY2023

Scope	Source	Quantity	Unit	CO_2 (kg)	CO_2 (MTCDE)	Biogenic (MT CO_2)	CH_4 (kg)	CH_4 (MTCDE)	N_2O (kg)	N_2O (MTCDE)	GHG MTCDE
N/A	Sinks: Non-Additional Sequestration: Carbon	-467	MT eCO2	0	0	0	0	0	0	0	0
1	Agriculture Sources: Animal Husbandry: Beef Cows	88	head	0	0	0	6,565	183.16	42	11.45	194.61
1	Agriculture Sources: Animal Husbandry: Dairy Cows	290	head	0	0	0	61,406	1,713.21	427	116.67	1,829.88
1	Agriculture Sources: Animal Husbandry: Horses	3	head	0	0	0	58	1.6	1	0.14	1.74
1	Agriculture Sources: Animal Husbandry: Sheep	440	head	0	0	0	3,681	102.69	85	23.1	125.79
1	Agriculture Sources: Fertilizer: Synthetic	1,658	pound N	0	0	0	0	0	16	4.28	4.28
1	Direct Transportation Sources: University Fleet: B5 Fleet	26	US gallon	252	0.25	0.01	0	0	0	0	0.25
1	Direct Transportation Sources: University Fleet: Diesel Fleet	20,529	US gallon	208,616	208.62	0	1	0.02	1	0.17	208.81
1	Direct Transportation Sources: University Fleet: Gasoline Fleet	32,740	US gallon	278,261	278.26	0	15	0.42	10	2.69	281.37
1	On-Campus Stationary Sources: Natural Gas	47,173	MMBtu	2,495,939	2,495.94	0	249	6.94	5	1.37	2,504.25
1	Cogeneration: Natural Gas	55,725	MMBtu	2,948,404	2,948.40	0	294	8.2	6	1.61	2,958.22
1	On-Campus Stationary Sources: Solar - Electric (RECs owned)	293,161	kWh	0	0	0	0	0	0	0	0
1	Cogeneration: Wood Chips	21,870	short ton	0	0	35,855.55	120,999	3,375.87	1,613	440.44	3,816.31
1	Refrigerants & Chemicals: HCFC-22	9	kilogram	0	0	0	0	0	0	0	17.23
1	Refrigerants & Chemicals: R-404a	9	kilogram	0	0	0	0	0	0	0	42.36
2	Electricity, Steam, and Chilled Water: Electricity	45,233,573	kWh	12,645,260	12,645.26	0	1,149	32.06	164	44.81	12,722.13
3	Commuting: Faculty Commuting: Automobile	840,061	vehicle mile	273,782	273.78	0	15	0.42	10	2.64	276.84
3	Commuting: Faculty Commuting: Bike	217,257	passenger mile	0	0	0	0	0	0	0	0
3	Commuting: Faculty Commuting: Carpool	115,871	passenger mile	18,882	18.88	0	1	0.03	1	0.18	19.09
3	Commuting: Faculty Commuting: Electric Vehicle	28,968	passenger mile	1,222	1.22	0	0	0	0	0	1.23
3	Commuting: Faculty Commuting: Public Bus	43,451	passenger mile	2,835	2.84	0	0	0	0	0	2.84
3	Commuting: Faculty Commuting: Walk	202,773	passenger mile	0	0	0	0	0	0	0	0
3	Commuting: Staff Commuting: Automobile	1,743,804	vehicle mile	568,318	568.32	0	31	0.87	20	5.49	574.67
3	Commuting: Staff Commuting: Bike	450,984	passenger mile	0	0	0	0	0	0	0	0
3	Commuting: Staff Commuting: Carpool	240,525	passenger mile	39,194	39.19	0	2	0.06	1	0.38	39.63
3	Commuting: Staff Commuting: Electric Vehicle	60,131	passenger mile	101	0.1	0	0	0	0	0	0.1
3	Commuting: Staff Commuting: Public Bus	90,197	passenger mile	5,885	5.88	0	0	0	0	0.01	5.89
3	Commuting: Staff Commuting: Walk	420,918	passenger mile	0	0	0	0	0	0	0	0
3	Commuting: Student Commuting: Automobile	1,328,473	vehicle mile	432,959	432.96	0	24	0.66	15	4.18	437.8
3	Commuting: Student Commuting: Bike	1,282,664	passenger mile	0	0	0	0	0	0	0	0
3		412,285	passenger mile	67,183	67.18	0	4	0.1	2	0.65	67.93

	Commuting: Student Commuting: Carpool										
3	Commuting: Student Commuting: Electric Vehicle	45,809	passenger mile	39	0.04	0	0	0	0	0	0.04
3	Commuting: Student Commuting: Public Bus	137,428	passenger mile	8,967	8.97	0	0	0	0	0.01	8.97
3	Commuting: Student Commuting: Walk	1,374,283	passenger mile	0	0	0	0	0	0	0	0
3	Directly Financed Outsourced Travel: Air: Faculty / Staff	5,850,019	passenger mile	2,532,074	2,532.07	0	0	0	29	8	2,540.08
3	Directly Financed Outsourced Travel: Ground: Personal Mileage Reimbursement	1,185,706	vehicle mile	386,430	386.43	0	21	0.59	14	3.73	390.75
3	Electricity, Steam, and Chilled Water: T&D Losses	45,233,573	kWh	707,707	707.71	0	64	1.79	9	2.51	712.01
3	Solid Waste: Landfilled Waste: CH4 Recovery and Flaring	937	short ton	0	0	0	17,240	480.99	0	0	480.99
3	Wastewater: Central Treatment System: Aerobic + Anaerobic Digestion	129,815,262	US gallon	0	0	0	2,479	69.18	715	195.27	264.45
3	FERA Mobile: University Fleet: B5 Fleet	26	US gallon	0	0	0	0	0	0	0	0
3	FERA Mobile: University Fleet: Diesel Fleet	20,529	US gallon	0	0	0	0	0	0	0	0
3	FERA Mobile: University Fleet: Gasoline Fleet	32,740	US gallon	0	0	0	0	0	0	0	0
3	FERA Stationary: Natural Gas	102,898	MMBtu	692,230	692.23	0	54,193	1,511.98	7	1.99	2,206.20
3	FERA Stationary: Solar - Electric	293,161	kWh	6,513	6.51	0	0	0	0	0	6.51
3	FERA Stationary: Wood Chips	21,870	short ton	0	0	0	0	0	0	0	0
3	Food	485,859	kg	1,989,035	1,989.04	0	0	0	0	0	1,989.04

FY2024

Scope	Source	Quantity	Unit	CO2 (kg)	CO2 (MTCDE)	Biogenic (MT CO2)	CH4 (kg)	CH4 (MTCDE)	N2O (kg)	N2O (MTCDE)	GHG MTCDE
1	Agriculture Sources: Animal Husbandry: Beef Cows	113	head	0	0	0	8,411	234.65	54	14.66	249.32
1	Agriculture Sources: Animal Husbandry: Dairy Cows	290	head	0	0	0	61,406	1,713.21	427	116.67	1,829.88
1	Agriculture Sources: Animal Husbandry: Horses	5	head	0	0	0	96	2.67	1	0.23	2.9
1	Agriculture Sources: Animal Husbandry: Sheep	450	head	0	0	0	3,764	105.03	87	23.62	128.65
1	Agriculture Sources: Fertilizer: Synthetic	1,730	pound N	0	0	0	0	0	16	4.46	4.46
1	Direct Transportation Sources: University Fleet: B5 Fleet	50	US gallon	482	0.48	0.02	0	0	0	0	0.48
1	Direct Transportation Sources: University Fleet: Diesel Fleet	24,801	US gallon	252,033	252.03	0	1	0.02	1	0.21	252.26
1	Direct Transportation Sources: University Fleet: Gasoline Fleet	41,622	US gallon	353,744	353.74	0	19	0.54	13	3.42	357.7
1	On-Campus Stationary Sources: Natural Gas	62,487	MMBtu	3,306,191	3,306.19	0	330	9.2	7	1.81	3,317.20
1	Cogeneration: Natural Gas	87,941	MMBtu	4,652,974	4,652.97	0	464	12.94	9	2.54	4,668.46
1	On-Campus Stationary Sources: Solar - Electric (RECs sold)	167,856	kWh	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	Cogeneration: Wood Chips	18,809	short ton	0	0	30,837.79	104,066	2,903.44	1,388	378.8	3,282.24
1	Refrigerants & Chemicals: HCFC-22	3	kilogram	0	0	0	0	0	0	0	6.61
1	Refrigerants & Chemicals: R-404a	9	kilogram	0	0	0	0	0	0	0	44.37
1	Refrigerants & Chemicals: R-410a	3	kilogram	0	0	0	0	0	0	0	7.67
2	Electricity, Steam, and Chilled Water: Electricity	43,634,726	kWh	12,198,294	12,198.29	0	1,108	30.92	158	43.23	12,272.44
3	Commuting: Faculty Commuting: Automobile	840,061	vehicle mile	273,782	273.78	0	15	0.42	10	2.64	276.84
3	Commuting: Faculty Commuting: Bike	217,257	passenger mile	0	0	0	0	0	0	0	0
3	Commuting: Faculty Commuting: Carpool	115,871	passenger mile	18,882	18.88	0	1	0.03	1	0.18	19.09
3	Commuting: Faculty Commuting: Electric Vehicle	28,968	passenger mile	1,222	1.22	0	0	0	0	0	1.23
3	Commuting: Faculty Commuting: Public Bus	43,451	passenger mile	2,835	2.84	0	0	0	0	0	2.84
3	Commuting: Faculty Commuting: Walk	202,773	passenger mile	0	0	0	0	0	0	0	0
3	Commuting: Staff Commuting: Automobile	1,743,804	vehicle mile	568,318	568.32	0	31	0.87	20	5.49	574.67
3	Commuting: Staff Commuting: Bike	450,984	passenger mile	0	0	0	0	0	0	0	0
3	Commuting: Staff Commuting: Carpool	240,525	passenger mile	39,194	39.19	0	2	0.06	1	0.38	39.63
3	Commuting: Staff Commuting: Electric Vehicle	60,131	passenger mile	101	0.1	0	0	0	0	0	0.1
3	Commuting: Staff Commuting: Public Bus	90,197	passenger mile	5,885	5.88	0	0	0	0	0.01	5.89
3	Commuting: Staff Commuting: Walk	420,918	passenger mile	0	0	0	0	0	0	0	0
3	Commuting: Student Commuting: Automobile	1,328,473	vehicle mile	432,959	432.96	0	24	0.66	15	4.18	437.8
3	Commuting: Student Commuting: Bike	1,282,664	passenger mile	0	0	0	0	0	0	0	0
3	Commuting: Student Commuting: Carpool	412,285	passenger mile	67,183	67.18	0	4	0.1	2	0.65	67.93
3	Commuting: Student Commuting: Electric Vehicle	45,809	passenger mile	39	0.04	0	0	0	0	0	0.04
3	Commuting: Student Commuting: Public Bus	137,428	passenger mile	8,967	8.97	0	0	0	0	0.01	8.97
3	Commuting: Student Commuting: Walk	1,374,283	passenger mile	0	0	0	0	0	0	0	0

3	Directly Financed Outsourced Travel: Air: Faculty / Staff	14,947,959	passenger mile	6,469,950	6,469.95	0	0	0	75	20.45	6,490.40
3	Directly Financed Outsourced Travel: Ground: Personal Mileage Reimbursement	1,344,291	vehicle mile	438,114	438.11	0	24	0.67	16	4.23	443.01
3	Electricity, Steam, and Chilled Water: T&D Losses	43,466,870	kWh	680,066	680.07	0	62	1.72	9	2.41	684.2
3	Solid Waste: Landfilled Waste: CH4 Recovery and Flaring	920	short ton	0	0	0	16,923	472.15	0	0	472.15
3	Wastewater: Central Treatment System: Aerobic + Anaerobic Digestion	116,733,047	US gallon	0	0	0	2,230	62.21	643	175.59	237.8
3	FERA Mobile: University Fleet: B5 Fleet	50	US gallon	0	0	0	0	0	0	0	0
3	FERA Mobile: University Fleet: Diesel Fleet	24,801	US gallon	0	0	0	0	0	0	0	0
3	FERA Mobile: University Fleet: Gasoline Fleet	41,622	US gallon	0	0	0	0	0	0	0	0
3	FERA Stationary: Natural Gas	150,428	MMBtu	1,011,980	1,011.98	0	79,225	2,210.39	11	2.91	3,225.28
3	FERA Stationary: Solar - Electric	167,856	kWh	3,729	3.73	0	0	0	0	0	3.73
3	FERA Stationary: Wood Chips	18,809	short ton	0	0	0	0	0	0	0	0
3	Food	737,108	kg	3,351,340	3,351.34	0	0	0	0	0	3,351.34